THE

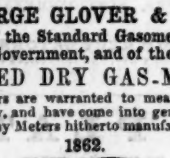
JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVII. No. 397—20th YEAR.] LONDON, JANUARY 7, 1868. [Subscription per Ann. 15s. in Advance 16s. Credit.] DOUBLE No. Price 1s.

RAMSAY'S NEWCASTLE CANNEL
COAL. Analysis by Dr. FYFE, M.D.:—
9746 cubic feet of gas per ton of coal.
26-candle gas.
13¼ cwt. coke per ton of coal.
N.B.—Ramsay's Cannel most resembles the Marquis of Lothian's Cannel, but superior as to coke.
RAMSAY'S PATENT CONDENSED COKE,
DO. GARESFIELD COKE.

RAMSAY'S FIRE-CLAY ARTICLES.
GAS-RETORTS, introduced 1828.
FIRE-BRICK WORKS, established 1804.
FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire Clay.
The Fire Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article.
The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the works are the most extensive in the Kingdom.
Manufactories: DERWENTHAUGH, SWALWELL, and HEBBURN QUAY. Offices: BROAD CHARE, NEWCASTLE-UPON-TYNE. Address, G. H. RAMSAY.

GEORGE GLOVER & CO.,
Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.
These Meters are warranted to measure correctly and not to vary, and have come into general use more rapidly than any Meters hitherto manufactured.
1862.


CLASSES X. AND XXXI.
CLASS X.—"*For ingenuity, completeness, and efficiency of apparatus used in measuring gas, and for excellence of material and workmanship.*"
CLASS XXXI.—"*For superiority of construction and workmanship.*"
Particulars and lists of prices forwarded on application to Ranelagh Works, Ranelagh Road, Pimlico, LONDON, S.W.; 15, Market Street, MANCHESTER; or 127, Boulevard de Magenta, PARIS.

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JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
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ALMA WORKS,
WALSALL, STAFFORDSHIRE;
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WET AND DRY GAS-METER
AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
ESTABLISHED 1830.
All materials found for the alteration of Public Lamps for lighting with the Rod. Regulators with Lava Burners.

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These Cannels are extensively used in the Gas-Works of Edinburgh, where the illuminating power of the gas is the highest in Britain.
The yield per ton is 12,573 cubic feet; illuminating power 33·8 standard candles; coke per ton 1045 lbs.
Ports of Shipment, in the Firth of Forth.

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Also the following STATION-METERS:—

One to pass	12,000	cubic feet	per	hour.
One	8,000	"	"	"
One	4,000	"	"	"
Two	3,000	"	"	"

The whole have been taken apart, thoroughly examined, and are in good working order, equal to new.
The above have been taken down to make room for larger.
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LONDON, 1862.

HAVE OBTAINED THE

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FOR

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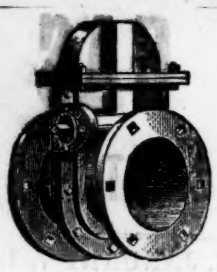

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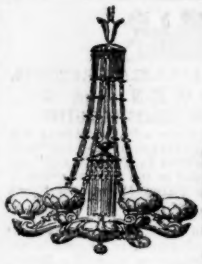

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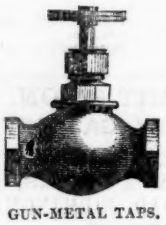

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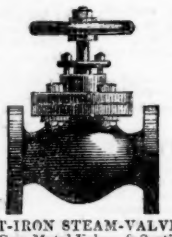
Bore.	Price.
½ inch	£0 4 0
¾ ,,	0 4 6
1 ,,	0 6 0
1¼ ,,	0 8 6
1½ ,,	0 11 0
1¾ ,,	0 14 0
2 ,,	0 18 0
	1 2 6



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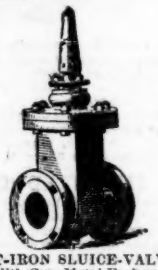
With Gun-Metal Valves & Seatings.

Bore.	Price.
2 inches	£1 2 6
3 ,,	1 17 6
4 ,,	2 15 0
5 ,,	3 15 0
6 ,,	4 17 0
7 ,,	6 0 0
8 ,,	7 5 0
9 ,,	8 15 0
10 ,,	10 10 0
11 ,,	12 5 0
12 ,,	14 0 0



CAST-IRON SLUICE-VALVES.
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Bore.	Price.
2 inches	£1 10 0
3 ,,	2 5 0
4 ,,	3 0 0
5 ,,	3 16 0
6 ,,	4 14 0
7 ,,	5 14 0
8 ,,	6 16 0
9 ,,	8 0 0
10 ,,	9 6 0
11 ,,	10 14 0
12 ,,	12 4 0

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FOR MEASURING LIQUIDS.

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GAUGES, PRESSURE AND EXHAUSTER REGISTERS,

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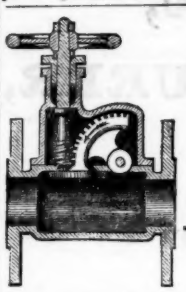
N.B.—The flanges of the plates for the Square Station-Meters are planed so as to ensure perfect joints—guaranteed not to leak.



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NEW PATENT

QUADRANT-MOTION SLUICE or GAS VALVE.

It will be seen, by reference to the drawing, that by this simple method a clear water-way is obtained, the disc being drawn by the screw or worm entirely out of the way; thus all the advantages of the ordinary sluice-valve are obtained at much less cost, and the liability to set fast and get out of order entirely obviated. They are adapted for all purposes for hot or cold water, and equally suited for high or low pressure; and in case of need of repair, a new valve-seat can be applied without removing the body or case of the valve.

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Extract from Report by Dr. Letheby:—

"The results have been very remarkable, for they show an average increase of 63 per cent. on the illuminating power of the gas. I am of opinion, therefore, that the invention is of great practical value."

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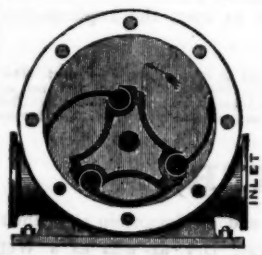

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The premises are held under lease for 999 years, at the nominal rent of £5 a year.

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Apply at the BROUGHTON COLLIERIES, near WREXHAM.

COKE Cleared by Barge from Gas Companies. If at a low price, cash before taking away.

State lowest price by letter to JOHN HUDSON, 12, Salisbury Square, FLEET STREET.

OXIDE OF IRON,

We are prepared to supply, on moderate terms,

HYDRATED PEROXIDE OF IRON (BOG ORE),

Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.

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NATURAL

HYDRATED OXIDE of IRON

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UNIVERSAL PARIS EXHIBITION, 1867.

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LEONI'S Patent Adamas GAS-BURNERS are entirely free from liability to Corrosion, Injury from Heat, or danger of Fraction, and are *unalterable* in the dimensions of their Apertures. Uniformity in the consumption of gas is obtained by the process of manufacture, which insures that the burners shall be precisely similar in pattern.

Net Cash Price, 8s. per gross.

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All sizes, from ⅛ in. to 4 in. diameter and upwards.

Also,

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INDIA-RUBBER BAGS for GAS-MAINS.

WASHERS for GAS and STEAM JOINTS.

VALVES (pure solid Rubber) for STEAM-ENGINES.

PACKING (Elastic) for STEAM-ENGINES.

FLANGE TUBING, for excluding Draughts and Dust through WINDOWS, DOORS, and GLASS CASES.

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Of any extent at Home and Abroad,

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AND

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DRY GAS-METER MANUFACTURER,

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HAS BEEN AWARDED THE HIGHEST PRIZE FOR

DRY GAS-METERS,

BY THE IMPERIAL COMMISSIONERS FOR THE

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(SUCCESSORS TO SAMUEL CROSLEY),

PATENT WET AND DRY GAS-METER MANUFACTURERS, &c.

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Established 1816.

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"It is well known that n Meters constructed so that the valve will close when the water is drawn off to such a point as to render them 3 per cent. slow the lights are liable to be extinguished by the closing of the valve by a sudden increase of pressure. To meet this difficulty, Mr. Pinchbeck has invented an ingenious and simple arrangement by which the action is reversed, and any such increase of pressure, in his Meter, raises the value instead of depressing it. The fact of the improvement having been adopted by Messrs. W. Parkinson and Co. is a sufficient guarantee that it practically and effectually remedies the inconvenience it is designed to meet."—JOURNAL OF GAS LIGHTING.

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STATION-METERS AND GOVERNORS.

Which can be seen at all the London Gas-Works. Also Liverpool, Manchester, Sheffield, Nottingham, Belfast, Glasgow, Birmingham, Dublin, Bristol, Leeds, Leicester, Brighton, Southampton, Sunderland, Wolverhampton, Bradford, Norwich, &c., &c.

TEST GASHOLDERS, EXPERIMENTAL METERS, EXHAUSTER REGULATORS,

MINUTE CLOCKS, PRESSURE GAUGES, PHOTOMETERS, PRESSURE REGISTERS, &c.

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THE JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, JANUARY 7, 1868.

Notes upon Passing Events.

MR. SIMON is a fortunate man, for, like very few others of our day, he has succeeded in filling a post which he himself created. He invented the Medical Department of Health, of which he is the zealous and able officer. But, although there can be no doubt that at the time that Mr. Simon's agitating labours commenced there was wide room for reform in every sanitary subject—although excellent work has been done in providing the public, and especially the masses, with the means of cleanliness, and in diminishing the causes of disease—it is impossible not to see that there is a strong flavour of quackery about all sanitary officers housed in official berths. One of Mr. Simon's duties is to prepare a report of what the department over which he presides has done during the last twelve months. It is a prevailing notion with literary officials that the importance of their office is increased in proportion to the thickness of the Blue-Books they annually manufacture. We dare say they argue, perhaps rightly, that many more people look at the outside than at the inside of a book, so they set to work with scissors and paste, and the assistance of unlimited quotations from their own or their colleagues previous productions of the same genus, and produce truly portentous volumes, at an expense for printing to the national exchequer which we commend to the investigation of any ambitious financial reformer in want of a job. Mr. Simon's last effort is a masterpiece of book manufacture. Let us take for an example what Mr. Simon's friends would call the "exhaustive manner" in which he treats the comparatively trifling outbreak of cholera last year. Mr. Simon has under his orders a small corps of medical men, who all seem to understand admirably the art of spinning out a report on any subject, with all the *et cæteras* of appendices, plans, maps, and pictures, prepared regardless of expense. Thus it seems strictly right that a report should be made on outbreaks of typhoid fever, or any infection or epidemical disorder of a serious character; and it is quite right to publish the directions and regulations issued in relation to the outbreak of Asiatic cholera in 1866 by the Privy Council acting under the Diseases Prevention Act, as well as separable notices of each outbreak of cholera in every town, although it may be noted that this disease never did attain the importance anticipated by Mr. Simon's department. It is impossible to avoid seeing that the medical inspectors naturally made the most of the symptoms, on the virulence of which depended their future employment. A clean bill of health meant nothing to do for a certain number of the sanitary doctors—doctors for the most part with a talent for reporting and little private practice to disturb their attention. The insignificance of the outbreak of 1866 is shown by the number of deaths—a little over 5000 in six months—a thousand in all England in one week being the greatest number. But after allowing margin for the most minute details of every feature connected with the districts attacked with cholera—soil, drainage, water supply, density and social condition of the population, state of temperature, amount of rainfall, details of the first and the last case—it seems really too bad to turn a Blue-Book published for the use of Parliament and officers of health into a report of clinical lectures on cholera patients. Nearly forty pages are filled up with cases which could only properly appear in a medical journal, where medical men could find them, if wanted. But Mr. Simon's book-making does not stop even with cases; he gives the history of previous researches—that is to say, he publishes, at public cost, about two hundred pages of the materials of a large book of a purely medical character, illustrated with plates of a very expensive kind. If it is necessary that a medical work should be published at the expense of the national exchequer, it ought to form an appendix separate from the huge report of Mr. Simon's Health Department, to be printed in numbers proportioned to the limited class who can possibly profit by such entirely technical disquisitions. But we know that, on the contrary, Mr. Simon's report is printed by thousands, and is used as waste paper all over the kingdom. Dr. Thudichum's "Chemical Investigation" of Cholera, with Coloured Illustrations of the Doctor's New

"Theory," may be a very valuable paper for medical societies to discuss, but when it is sent to every member of the two Houses of Parliament, it is a gross abuse of the privilege of printing attached to public departments. The cost of the illustrations must exceed that of the printing, for, beside coloured plates, there are thirty-nine diagram tables, representing the progress of disease in as many patients. Amongst the contents of the first part of this fat volume is another splendid specimen of book-making in "A Report on the Results "which have been gained in various parts of England by "Works designed to promote the Public Health"—a very proper subject for a report honestly and intelligently prepared; but this is essentially a brief for the plaintiff's—viz., Mr. Simon's—department. The condition of each town before sanitary arrangements were attempted is taken from the "special cases" of such authorities as Messrs. Rammell and Ranger, of the old Board of Health; all their failures are passed over, and we are called upon to believe that the undoubted improvement produced by drainage, sewerage, and water supply is specially due to the plans of the ignorant quacks who were turned out of power by a universal burst of indignation from the towns oppressed by their experiments. We call attention to this fat book of Mr. Simon, because it is an opportunity of disseminating useful practical information amongst the municipal authorities of the country wasted in a mass of useless and mischievous essays.

The inhabitants of Tunbridge Wells are now suffering the legal agonies that will soon befall nearly all the tow ns th have been in the habit of making a main sewer of the nearest brook. Mr. Julian Goldsmid, M.P., a brother of the millionaire Hebrew baronet of that name, has a park with a lake near Tunbridge Wells, fed by a brook into which the contents of the Tunbridge sewers have been emptied, under the engineering plans carried out by the Tunbridge Wells Improvement Commissioners. Mr. Goldsmid took time by the forelock, and objected to his ornamental lake being turned into a common cesspool, before any great damage had been done. The commissioners declined to alter their plans, and so they went to law hammer and tongs. The Master of the Rolls took an unfavourable view of the commissioners case, and the Lords Justices on appeal agreed with the Master of the Rolls. In the course of the suit we suppose that the inhabitants of Tunbridge were not nice in their expressions of opinion on the conduct of their neighbour; at any rate, some old or recent slight must have rankled in Mr. Julian Goldsmid's breast, for, according to the *Tunbridge Wells Gazette*, he has put the town revenues in sequestration with the least possible notice, and without any occasion. Perhaps Mr. Goldsmid could give very obvious reasons why the Tunbridgians deserve no mercy at his hands; perhaps, quoting a famous play, he would say—

> Signior Antonio, many a time and oft,
> In the Rialto, you have rated me
> About my moneys and my usances:
> Still have I borne it with a patient shrug—
> For sufferance is the badge of all our tribe.
> * * * * *
> Shall I bend low, and in a bondsman's key,
> With 'bated breath, and whispering humbleness,
> Say this—
> Fair sir, you spit on me on Wednesday last;
> You spurn'd me such a day; another time
> You call'd me dog; and for those courtesies
> I'll lend you thus much moneys.

People in the position of Mr. Julian Goldsmid do not generally make bitter war on their neighbours without they are resenting some bitter unspoken grievance. At any rate, Tunbridge Wells is in a difficulty with its sewage, which must be solved immediately if they want to get the sheriff's officers out of their treasury. In the days of the Board of Health autocracy no plans of drainage were approved unless prepared by one of the favoured engineering acolytes of the Grand Lama of the Board, Mr. Chadwick; and it was this jobbing tyranny that eventually worked the decline and fall of the Board. At present, towns desiring to execute sanitary works are under less obvious pressure; but it curiously happens that wherever towns apply to the consulting engineer of the Government Health Department for advice, the same gentleman, even in competition with much more experienced and eminent engineers, always gets the work. It is, indeed, notorious that nothing so easily passes muster with the powers in Whitehall Place as

What Lawson plans and Rawlinson approves.

Mr. Lawson's plans are sometimes very expensive, but then he was once Mr. Rawlinson's assistant, and his kind master, with a distinguished generosity, beyond all praise, still extends to him his golden patronage. In the Tunbridge Wells case it is reported that Mr. Lawson has prepared, and Mr. Rawlinson sanctioned, a scheme for irrigating land near Tunbridge Wells worth £500 an acre as building land. This may be inevitable, although we cannot believe that such is the case, but it is certainly a most costly plan, and ought not to be accepted without other alternatives being well considered. Irrigation obtains its highest value when applied to the poorest land. In a case in which we have lately been consulted land composed of pure sand, more fit for drying ink than any other purpose, will be made equal to the best alluvial soil, in productive power, by the application of liquid and solid sewage. The Tunbridge scheme, according to our present means of information, seems like burning diamonds to make charcoal. In so difficult a case we think that some of the deodorizing schemes ought to be tried. There is no scheme on foot for hatching salmon in the Calverly Brook.

A very pretty discussion on a subject of immense interest to the metropolitan public is going on between Mr. Pollard, the clever clerk—that is secretary—of the Metropolitan Board of Works, and Messrs. Baxter, Rose, and Norton, the solicitors of the District Metropolitan Railways. Mr. Pollard declares that it is because the railway company is hard up for funds that the Thames Embankment is not finished. Messrs. Baxter deny it, and for some time the question as to the "rights" of the matter remained in doubt, but in this instance we must admit that Messrs. Baxter, Rose, and Co. are right, and the Metropolitan Board entirely wrong. As it is a sound maxim in administration not to keep any more cats than catch mice, so in finance the least possible capital should be invested in unproductive works. To make the railway of any use to the shareholders, the embankment must be completed to Blackfriars Bridge. That cannot be done. The contract between the Temple and Blackfriars cannot be let, because the Metropolitan Board have not come to terms with the intervening gas company. For this reason the railway engineer wisely advises his directors not to sink money in a line under the embankment, which will be only a *cul de sac*, but to devote the capital of the company to completing the section of the circle between Notting Hill, by Kensington, to Westminster, because that will be a paying bit of line; *ad interim*, the penny steamboats will complete the circle to the City. At the same time, it must be admitted that Mr. Pollard has made a good fight for his Board, which naturally wishes to open to foot passengers the splendid road to Temple Stairs. Both are in the right, but, unless the public are prepared to pay the railway company, they cannot be expected to sink capital in order to create an early sensation in favour of the Metropolitan Board. . . . . .

Mr. Bernard Samuelson, M.P. for Banbury, a trained mechanic who has succeeded, first, as a manufacturer of agricultural implements, and next as an ironmaster, has been publishing the results of a tour he has been making to ascertain the comparative condition of foreign manufactures. He has found that the liberty which our workmen abuse in trades unions to restrain the profits of labour, has done much to favour the competition of foreign manufacturers. That is a matter of course; we need not dwell on it, because it is inevitable, as far as our laws are concerned. Trades unions in England, encouraging the competition of foreign workmen, will go on until our workmen see their mistake. The other point to which Mr. Samuelson directs attention is the superior manner in which scientific knowledge is applied to promoting manufacturing operations in France and Germany. There something may be done. It is not, however, in our opinion that the education of workmen is so deficient as the education of our master capitalists. We have referred to this fact before. Our middle classes have generally either a plain commercial or a strictly classical and mathematical education. In France and Germany the young gentlemen intended to hold responsible positions in manufactories, receive an admirable technical education. Thus the Leeds district, following the old routine, suffers from the competition of Belgium, while Bradford, where the trade is comparatively new and several intelligent Germans are settled, thrives. We are not surprised to learn that, at Nottingham, the School of Design, despised by Mr. Bernal Osborne, has rendered real service to the lace curtain trade, while in other branches Calais, with children's cheap labour working unlimited hours, competes seriously. But the most striking examples of what capital

directed by educated intelligence can do, may be found in the great workshops like that of Creuzot, where the coal and ores are raised on the spot, manufactured into iron, and this again into the most powerful and elaborate machinery. The works cover 300 acres; the workshops and forges, 50 acres; the mines yield annually 250,000 tons of coal, and 300,000 tons of iron ore. The iron-works produce more than 100,000 tons of iron—machinery, locomotive, and marine iron bridges and viaducts, and even iron gunboats and river steamers—of an average yearly value of £600,000; 9950 workpeople are employed at the works of Creuzot, and receive in wages the sum, in all, of £370,000 a year. The steam-engines worked are equal to a duty of 10,000-horse power. The machinery in use is made after the best English designs; but no appliances for producing perfect work, or for economizing the cost of production, have been omitted, and the great forge is "probably unequalled in the world." Excellent schools—both primary and special or technical—have been established in connexion with the works, and, by means of these, unfailing supplies of skilled, scientifically-trained workmen are obtained. Mr. Samuelson went over the works of the Terre Noire Company, and saw the process of manufacturing Bessemer steel from the iron—a simplification of the Bessemer process as compared with the practice in England—which involves such economy that the Terre Noire Company are supplying one of the great French railway companies with 20,000 tons of steel rails at a price below their prime cost in England, in spite of comparatively dear fuel and ores. At these works no precaution is omitted that success may be insured, and measurement and qualities are looked upon with as much anxiety as if the great iron-works were a chemical laboratory. "The most careful chemical daily analysis of all "the raw material and products is one of the conditions "of the success of Terre Noire in their manufacture. "At the steel-works of Firminy, near St. Etienne, an-"other modification of the making of steel is followed, "and steel rails are manufactured at an extraordinarily cheap "rate. The ingots run from the furnace are simply rolled, and the rails produced are of so excellent a quality that the waste ends are used in the works for turning tools and chisels, without being re-melted or subjected to any other process except that of "tilting" or hammering. The works of Terre Noire and Firminy are unsurpassed in the world for economy in the production of ordinary steel. But the most marvellous steel-works in the world are those of Krupp and Essen in the Wupper Valley, Westphalia. They consume 800 or 1000 tons of coal per day, raised from pits within the walls of the works or immediately adjoining, the cost of the coals being less than "5s. per ton. The machinery of every department is as "perfect as the magnificent products of the works would lead "one to expect. The range of crucible furnaces is a sight of "its kind unparalleled in the world, except, perhaps, at the "neighbouring works of Bockum. At the time of Mr. "Samuelson's visit a steel 1000 pounder breech-loading gun "was nearly completed for Russia, and several 200 and 300 "steel breech-loading guns, hooped and rifled for the German "navy. Thousands of steel breech-loading guns were in "course of manufacture for all nations. Besides these, Mr. Samuelson noted a number of forced cast-steel cranked axles—one of them of enormous size for a transatlantic steamer then being built at Greenock by the Messrs. Caird. Eight thousand men are employed in these works, and 60,000 tons of steel—more than twice the entire export of steel from the United Kingdom—are produced annually.

Circular to Gas Companies.

The Bill for the amalgamation of the metropolitan gas companies, of which we gave an outline in our last number, comprises all the essential amendments recommended by Mr. Cardwell's committee, and, should it be passed, it would confer substantial benefit on the gas consumers without, we believe, materially injuring the gas companies, after the new arrangements had been made and got into working order. Some dissatisfaction has, indeed, been expressed with that clause of the Bill by which the maximum price to be charged is only 6d. per 1000 feet below that fixed by the Metropolis Gas Act, so that in point of fact the quality and price would remain nearly the same as at present until after December next, when the price and standard of illuminating power might be revised by commissioners to be appointed for the purpose by the Board of Trade. Though there might be no immediate advantage from the operation of the Act in that respect, the numerous provisions for regulating the price and quality of the gas, and for the inspection of the accounts of the companies, would in the course of next year, it might reasonably be expected, place the gas supply of London on a satisfactory basis, and he must be a most impatient gas reformer who would not wait so short a time to see his expectations realized. The Bill of which Mr. Beal announced himself the originator, and which he urged the Court of Common Council to adopt, was calculated, indeed, to have a more immediate effect by seriously damaging the property of the gas companies without producing more ultimate advantage to the consumers; but the project has been allowed to drop. It might, however, be revived and introduced into Parliament as what is termed a "hybrid" Bill, and that may probably be the intention of the parties who gave the notice. The Board of Trade have, however, sufficient cause to be dissatisfied with having had to pay £3614 for parliamentary expenses in promoting their Metropolis Gas Bill last session, and are not likely to engage again in a similar undertaking. Returns of the expenses incurred by all parties in promoting or in opposing that Bill would be instructive, and they might be obtained on the motion of a member of the House of Commons. The total amount so expended is reported to exceed £26,000.

The position of the Manchester Corporation gas undertaking, as disclosed in the yearly accounts to June, 1867, published in our last, should be carefully studied by all who advocate municipal trading in gas, and who are demanding to have the illuminating power increased. Those accounts show very clearly what has been the effect, even on that model Corporation gas supply, of the continued advances in the charges for coal, cannel, and labour, in diminishing the profits of such undertakings. The present fixed and floating capital is stated to be £591,552, which is exclusive of nearly £300,000 written off in previous years for depreciation. The gross profits during the year are stated to have been £47,323, or 8 per cent., without any allowance for depreciation, interest, or the liquidation of the mortgage debt; after deducting which charges the net profit is reduced to £12,257, or less than 2½ per cent. on the capital. The illuminating power of the gas had also been reduced nearly one candle, the average quality, according to Mr. Light's report, having been 20·58 candles at the works; which materially agrees with Dr. Odling's report, who found the mean of 12 experiments, made about half a mile from the works, to be 18·38 candles. It is questionable whether the illuminating power of the gas can be further reduced without creating much dissatisfaction. Under such circumstances, the Corporation of Manchester will be glad that the Liverpool Gas Company have set them the example of raising the price, which it will be prudent for them to follow; and the consumers could make no reasonable objection to a price that will increase the gross profits to 10 per cent. In Liverpool the price charged by the company during the two last years has been only 3s. per 1000 feet within the parliamentary boundary of the town, and 3s. 4d. beyond it, for gas having an illuminating power exceeding 20 candles. The recently greatly increased cost of cannel, and the advance in the rates of labour, especially to stokers, have reduced the profits so much that the reserve-fund is exhausted, and the company have been compelled to give notice that it is no longer practicable to maintain the exceptionally low charge at which they have supplied gas, and the price has been raised 3d. per 1000 feet. The reasonableness of this advance seems to be generally admitted. The *Liverpool Courier*, remarking on it, observes:—"The Liverpool people have no reason to be dissatisfied either "with the present price or quality of the gas supplied by the "United Company; and, even with the slight increase now "contemplated, this town will compare favourably with the "bulk of the country. Taking things as they are, the gas "consumers of Liverpool have little cause to grumble." The very large consumption of gas, combined with excellent management, have enabled the company to supply their customers at the low price hitherto charged, and to maintain at the same time their statutory dividend of 10 per cent. The quantity they are now daily sending out from their five works in different parts of the town is upwards of 7½ million feet, made from Wigan cannel, without any admixture of common coal.

The Cambridge Gas Company successfully carried a Bill through Parliament last session for extending their limits and increasing their capital, and defeated the opposition of the

Corporation in an attempt to prevent the payment of back dividends due up to the passing of the Act. The maximum price of gas was fixed at 4s. per 1000 feet, and the illuminating power at 14 candles, tested at the town-hall. Whether the company used their victory discreetly or not we cannot say, but at a meeting of the commissioners not long after the passing of the Act one of the directors who was present stated very strongly that they did not intend to reduce the price of gas until all the back dividends were paid. An antagonistic spirit had evidently been roused in the Corporation, which was shown when the question of renewing the contract for public lighting was considered. By the present contract the price charged for the estimated quantity of gas supplied is considerably less than the price charged to private consumers, and that price having been since reduced, the Gas Contract Committee contended that the charge for lighting the public lamps should be reduced in the same proportion, and proposed to recommend to the commissioners the acceptance of a reduction of one-eighth off the price of the present contract, which would give £2 16s. to be paid per lamp in winter and 14s. in summer. The directors, however, would not agree to such a proposition, though they were willing to make some reduction. The committee, therefore, recommended that their own offer should be adhered to, and their report was adopted. Under those circumstances the commissioners, under an old Act, proceeded to advertise for tenders to supply the public lamps with gas for a period not exceeding fourteen years nor less than three. It is very questionable whether the Improvement Commissioners have power to break up the streets for laying down gas-mains, and it is still more questionable whether they could delegate such a power to others; nor is it at all probable that any one would expend money for the construction of gas-works on a fourteen years contract: but an enterprising firm of gas engineers, seeing in the invitation for tenders the prospect of a job, started a consumers company, and sent in a tender to supply the public lights with gas at the rate of 3s. per 1000 feet. The commissioners, at a special meeting on the 17th ult., accepted that tender of a company which exists only on paper, without any works. At that meeting, the Rev. Dr. Phelps, the Master of Sidney College, and chairman of the gas company, said that it was certain that no company could remuneratively supply gas on the terms offered, and that it was, in fact, an attempt to ruin the existing company, whose maximum dividend, he said, is only now 9 per cent. With respect to the payment of back dividends, he said he had always been against it, and that he had advised the directors never to pay them, though Parliament had decided that they had the right. Mr. Balls, the director of the company who, at the previous meeting, contended strongly for the right of the shareholders to receive back dividends, admitted that though it was their right, it might be good policy not to enforce it; and two other shareholders of the old company expressed their willingness to waive the right to back dividends, the insistence on which, it was stated by some of the commissioners, was the cause of the promotion of the new company. The result of the discussion was the adoption of the recommendation of the Gas Contract Committee, that the tender of the Cambridge Gas Consumers Company, Limited, be accepted. With the precedents of the Sheffield, the Longton, and the Crays Companies before them, the existing company are not likely to remain quiescent, and suffer a rival company to be established. The chairman intimated as much at the last meeting, and he has since issued an address to the members of the university and the inhabitants of the town of Cambridge, on behalf of the directors, pointing out the fallacies in the prospectus of the new company, and examining their chances of success. In that address it is stated that the company, with their larger capital and the obligation to supply more costly gas under the old Act, have very little chance of being able to pay back dividends, and that, should there be any surplus to enable them to do so, the directors are disposed to recommend their shareholders to reduce the price of gas rather than pay back dividends. In reply to the assertion in the prospectus that no reduction of price can be reasonably expected from the old company, the chairman refers to the numerous successive reductions, from 10s. to 4s. per 1000 feet, made since their first Act was obtained, in 1840. He then proceeds to show that, at the rate at which the Consumers Company propose to supply gas, they could not obtain any remunerative profit, and to contradict the assertion in the prospectus that the works of the old company are not in an efficient state. It is evident, from the chairman's address, that the directors are quite prepared to adopt active measures against the new company, should they succeed in inducing a sufficient number of persons to take shares in so hazardous an undertaking to enable them to construct the necessary works.

Some alleged attempts of the Fenians to destroy property and excite alarm by explosions of gas in different parts of the country, have added to the panic created by the reckless acts of damage and murder committed by those miscreants. At the Warrington Gas-Works a plug was removed from the cover of the purifier, and if not discovered it might have caused a serious explosion. At Worcester the plug was taken out of the meter at the town-hall, and the building might possibly have been destroyed. But neither of those mischievous acts is unprecedented, and they have not been proved to have any connexion with Fenianism, to which they have been attributed. Be that as it may, there can be no doubt that many reckless plotters are conspiring for the destruction of property, and, without increasing the panic they have excited, we strongly recommend gas companies to maintain the utmost vigilance, and a special surveillance over suspicious or doubtful characters in their employ.

An important case, depending on the construction of the 54th section of the Metropolis Gas Act, 1860, has been decided by the Lords Justices on an appeal from a judgment of Vice-Chancellor Stuart. The plaintiffs were the Imperial Gas Company, and the defendants the West London Junction Gas Company, who have their works at Wormwood Scrubs, and the Great Western Railway Company. The 6th section of the Act, in which separate districts are assigned to each of the metropolitan gas companies, declares that "no other company or person than the company to whom such limits are "for the time being assigned, or shall hereafter be assigned, "shall supply gas for sale within the said limits, unless authorized by Parliament so to do." In a subsequent saving clause (the 54th) it is, however, provided, that "Nothing in "this Act contained shall avoid, prejudice, or impair any of "the powers now exercised by or vested in the Metropolitan "Board of Works, or in the Commissioners of Sewers of the "City of London and the liberties thereof, or any powers now "vested in any local authority within the metropolis, or any "powers now exercised or possessed in respect of the manufacture or supply of gas within the metropolis by any railway "company, or by any other person or persons making or "supplying gas for his or their own use, and not making "or supplying gas to the public as a trade or business." The Great Western Railway Company, prior to the passing of the Act, had entered into an agreement with the West London Company to be supplied with gas at their terminus at Paddington. They had also, in 1862, applied the gas so supplied to light the carriages and stations of the Metropolitan Railway, and they proposed to light the Great Western Hotel, of which they are lessors. The Imperial Company, within whose district the terminus of the Great Western Railway is situated, considered such a supply of gas to be a contravention of the provisions of the Act, and filed a bill in Chancery to prevent it. Vice-Chancellor Stuart decided against them, and the case was carried by appeal to the Lords Justices, before whom it was argued three days. The gas-works at Wormwood Scrubs, towards the construction of which the Great Western Railway contributed, are situated beyond the Imperial Company's district, and it appeared that the gas supplied was measured at that station, the quantity some asured being charged 2s. 10½d. per 1000 feet. That fact Lord Justice Cairns considered was decisive of the question as regarded the West London Junction Gas Company, the gas being, in fact, delivered by them at Wormwood Scrubs into the railway company's mains. The other point, as to the supply of gas by the Great Western Railway Company to the stations and carriages of the Metropolitan Railway, was abandoned by the plaintiffs, so that the only remaining question was the proposed lighting of the Great Western Hotel; but as nothing had been done for carrying any contract for that purpose into effect, it became merely a question of granting an injunction for a threatened injury, which the Lords Justices refused to do, and the appeal was therefore dismissed with costs.

The correspondence between the War-Office and the Perth Gas Company before the supply of gas to the barracks was discontinued has been published, and it places administration by red tape in a more unfavourable point of view than it at first

appeared. The secretary of the gas company, though not asked for any explanation of the cause of the advance in price from 5s. per 1000 feet to 6s. 8d., stated all the circumstances which led to it, and represented that gas at 6s. 8d. with an illuminating power of 33 candles is very much cheaper than 14-candle gas at 5s. But to the apprehension of the War-Office gas is gas, and whatever the difference in quality it should be charged the same.

The gas question continues to produce great excitement in Dundee, where opinions among the different local authorities are greatly at variance as to the policy of the proposed purchase and transfer of the works of one or of both the existing companies to the Corporation. Though two Bills have been lodged for procuring the sanction of Parliament to such an arrangement, it seems doubtful, judging from the strong expressions of adverse opinions at the meetings of public bodies in the town, whether either of the Bills will be proceeded with.

We publish in another column an interesting paper by Mr. Valentin, the principal laboratory assistant in the Royal College of Chemistry, "On the Estimation of Sulphur in Coal Gas." The subject has given rise to much controversy, but it appears to be now better understood, and greater uniformity of results is obtained by recent modes of experimenting. The paper will probably give occasion to some discussion in our columns, and it may lead to a modification of future legislation on the subject.

A very instructive lecture on "Coal and some of its Products" was recently delivered by Mr. E. Goddard, at the Ipswich Mechanics Institution, which has been printed in a condensed form, and well deserves perusal by all who take an interest in the subject. We regret that the press of other matter prevents the transfer of it into our columns. Much good is done by such popular lectures, and gas managers of position, like Mr. Goddard, may confer much benefit by explaining and illustrating in their several localities the principles of gas lighting.

A crowded and excited meeting of shareholders and creditors of the County and General Gas Consumers Company, Limited, was held yesterday afternoon, at the London Tavern, to consider the position of affairs in connexion with a petition which has been presented to the Court of Chancery by Mr. Craufurd, M.P., to wind up the undertaking. The chair was occupied by Mr. Erasmus Wilson, and Mr. H. P. Stephenson, formerly consulting engineer to the company, at some length criticized the general policy of the directors throughout the whole history of the concern, and condemned the course which the chairman of the Board, Mr. Craufurd, had recently taken, in applying for a compulsory winding-up order. Several gentlemen having spoken on the subject, Mr. Craufurd defended himself from the charges brought against him, and stated that he had sought the protection of the court solely to prevent the plant of the company being swept off by a judgment creditor. It was generally admitted that the affairs of the company were in a hopeless condition, and the only question was whether the winding up should be compulsory, or a voluntary one under the supervision of the court. The latter course was, after nearly three hours discussion, adopted upon a show of hands. We shall give a report of the proceedings in our next number.

Communicated Article.

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ON THE ESTIMATION OF SULPHUR IN COAL GAS.

By Wm. Valentin, Esq.,
Principal Assistant in the Royal College of Chemistry.

Sulphur is known to exist in coal gas in several forms of combination, the principal of which is bisulphide of carbon (CS_2). By the combustion of gas for domestic purposes a certain amount of sulphurous acid is formed, which diffuses itself into the atmosphere of our rooms, together with the steam which is simultaneously generated, and becomes rapidly converted into sulphuric acid by the absorption of oxygen from the air.

Advantage has been taken of this oxidation of sulphur into sulphur acids by combustion, and methods of quantitative analysis have been based upon it. The best known, and I believe the most generally employed method for the quantitative estimation of sulphur in coal gas is that devised by Dr. Letheby, and which was described in the *Chemical News* of Feb. 14, 1863.

In my capacity of gas examiner to one of the London gas companies I have had frequent occasion to observe that this method of Dr. Letheby's, which recommends itself, at first sight, by its great simplicity and facility of execution, does not comply with the requirements of a *quantitative* test for sulphur in coal gas, for the simple reason that it never tells even approximatively *how much* sulphur there really is in gas.

This arises from two causes—viz., imperfect combustion, and consequently imperfect oxidation of the sulphur compounds contained in coal gas; and, secondly, imperfect condensation of the sulphur products of combustion.

Whilst endeavouring to overcome these defects in Dr. Letheby's sulphur test, I first tried various burners that promised to consume the gas and to oxidize the sulphur compounds more perfectly; but I found that I made but little progress, and sometimes obtained even a lesser per centage of sulphur than that given by Dr. Letheby's apparatus. I was more successful in preventing a loss of sulphur arising from incomplete condensation. This loss was, however, not so great as to account for the deficiency in the sulphur indicated by Dr. Letheby's test and that given by more perfect methods, such as the soda-lime process.

Professor Anderson, of Birmingham, who bestowed much attention upon the method now generally employed for estimating sulphur in coal gas,* and who, it would appear, directed his efforts principally towards a more complete oxidation and absorption of the sulphurous products that pass off with the large amount of non-condensable gaseous products of combustion, sums up his results as follows:—

1. "That a single (fishtail) burner consuming the gas at the rate of 2½ cubic feet in five to six hours effects its combustion most completely; that even under these circumstances 2½ per cent. of the sulphur in gas cannot be burned into sulphurous acid.

2. "That in no case can the sulphurous products of the combustion be wholly recovered where condensing receivers open to the external atmosphere are employed. The best arrangement of apparatus set up on this principle loses 40 per cent. of sulphur, and the arrangement given by Dr. Letheby I find, from the same cause, always entails a loss varying from three-fourths to four-fifths of the bisulphide sulphur in the gas."

At page 49, referring to the corroborative quantitative results obtained by M. Ellissen,† of the Paris Gas-Works, and by Mr. Evans, the engineer of the Chartered Gas-Works, Professor Anderson again states "that by the employment of the 'Leslie' jet and open receivers not more than from one-fourth to one-fifth of bisulphide sulphur of coal gas can be estimated."

Since a committee of the House of Commons was engaged during the last two sessions in trying to amend the Act of Parliament of 1860, which regulates the supply of gas to the metropolis, and since, in all probability, an amended Act containing more stringent regulations with regard to the sulphur impurities in coal gas will be passed during the ensuing session of 1868, I thought it desirable to provide the gas engineer with a ready and reliable method for estimating sulphur in coal gas, and to supply him with the means of ascertaining *how* much sulphur *can* be removed by employing the purifying materials now in use, instead of "making a leap in the dark" by submitting to stringent parliamentary regulations as to purity of the London gas supply, with which the gas manufacturers may possibly not be able to comply hereafter.

After various failures to convert the sulphur compounds into sulphuretted hydrogen, by passing the gas together with steam over heated copper, &c., my endeavours were mainly directed to secure complete combustion of the gas, so as to obtain all the sulphur impurities in the form of sulphuric acid and not as sulphurous acid, as I had observed how difficult, or rather how impossible, it is completely to oxidize a small quantity of sulphurous acid diffused throughout a large amount of gaseous products of combustion, and to absorb it by passing these products through various oxidizing solutions.

There is, as is well understood, a definite amount of air required to completely burn coal gas, and to convert it into its two principal ultimate products of combustion—carbonic acid and water (steam). Sulphur compounds are oxidized readily into sulphurous acid; complete oxidation to sulphuric acid, however, is effected with much difficulty only, as will appear hereafter. It appeared to me, then, that a mode of combustion which supplied to the gas exactly that amount of atmospheric oxygen which is requisite to cause complete combustion (or a slight excess of atmospheric air even), and which brought the gaseous particles into the most intimate contact with the oxygen of the air, at a high temperature, during their passage over a highly porous material, such as spongy platinum, known to possess that power in the highest degree, would most effectually accomplish the object in view.

On testing this theory by experiment, I found that complete combustion was effected by causing the gas to pass, together with an adequate amount of air, through a porcelain tube strongly

* "On the Defects in the Apparatus generally used for the Determination of Bisulphide of Carbon in Coal Gas." A reprint from the Journal of Gas Lighting, p. 53.

† "Sulphur in Coal Gas." Report by Thos. G. Barlow, C.E., and Albert Ellissen, Chief of the Experimental Works of the Paris Gas Company.

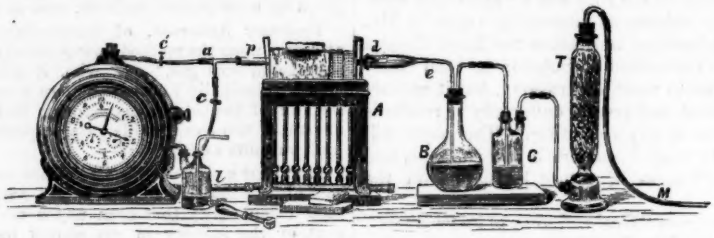
heated in a small Hofmann's gas combustion furnace. Gas and air are mixed just before they enter the tube, and are made to pass slowly over ignited spongy platinum, loosely packed in a platinum cage made of a sheet of fine platinum gauze, which completely fills the tube. With an insufficient amount of air—about three parts of air to one of gas—carbonic oxide is mainly formed, and the sulphur in the gas is converted chiefly into sulphurous acid, part of which resolves itself into sulphuretted hydrogen on passing along with the steam over the ignited spongy platinum—

$$SO_2 + OH_2 = SH_2 + O_3$$

yielding, in fact, oxygen to aid in the combustion of the carbon compounds of the gas.

A vivid combustion takes place in the anterior portion of the tube, just where the mixture of gas and air first comes into contact with the spongy platinum. On passing the gaseous products of combustion through several Woolfe's bottles and towers containing powerful oxidizing solutions, such as chlorate of potash and hydrochloric acid, and lastly through a solution of pure soda and through distilled water, I satisfied myself that it is extremely difficult to completely oxidize and absorb the sulphur product of the combustion, since I almost invariably found traces of sulphurous acid in the last tower containing distilled water only. It was evident that no reliance could be placed upon the oxidizing and absorbing power of the various solutions. Gaseous sulphurous acid is not oxidized nor retained so readily, when mixed and diffused throughout an overwhelming amount of other gases, as is generally supposed, and it became, therefore, necessary to modify the mode of analysis at first adopted. This is a fact of great importance, since it throws light upon the discrepancies observed by various chemists in the results obtainable by Dr. Letheby's apparatus.

After various alterations I fixed at last upon the following apparatus, represented in Fig. 1.



A is a small gas combustion furnace,* containing three perforated clay burners in a row or line. Eight or ten rows of such burners suffice. On the low burners of the middle row rests a Berlin-ware porcelain tube, *p*, capable of resisting a high degree of heat and rapid changes of temperature. This porcelain tube, *c*, is 12 inches long, and has a diameter of half an inch. It is best embedded in thin layers of asbestos, spread out in a tinned iron trough, to prevent the direct action of the gas-flames upon it. A platinum tube, made of fine platinum gauze, is made to fit tightly into the porcelain tube. It need not be longer than from 5 to 6 inches. One end is closed by causing the platinum gauze to overlap, and the tube can then be filled with spongy platinum, and when closed at the other end and fastened together at short distances with thin platinum wire, is ready to be introduced into the porcelain tube. A tight-fitting cork fixes a narrow glass tube, *a*, drawn out to a point, into the anterior part of the porcelain tube. The latter reaches far enough out of the furnace, and the flow of cold gas and air mixed keeps this part of the tube sufficiently cool to render slight explosions in the anterior part of the porcelain tube and in the glass tube of rare occurrence. Although harmless enough in themselves, they may be entirely avoided by admitting a slight excess of air over that required to completely burn the gas. The gas is supplied through one leg of the short bifurcated tube, and the air through the other. Both gas and atmospheric air are measured by being passed through meters of sufficient capacity to register from 5 to 10 cubic feet of gas per hour. The air may be passed through a solution of acetate of lead, contained in a small two-necked Woolfe's bottle, *l*, to remove any trace of sulphuretted hydrogen before it enters the meter. Compression cocks, *c c'*, regulate the flow of the gas and air.

Over the posterior end of the porcelain tube is fitted an adapter-tube, *d*, drawn out and joined on to a narrow glass tube, *m e*. The narrow end of the tube is bent at right angles, and fits tightly into a perforated cork, so as to deliver the gaseous products of the combustion into a solution of pure caustic soda, entirely free from sulphuric acid, such as is obtained now in commerce (made by burning sodium under water) from the Magnesium Company, Manchester. From 10 to 15 grammes are a convenient quantity to be employed. This solution of caustic soda may be placed into a two-necked Woolfe's bottle, or, as shown in the drawing, into a small flask, B, capable of holding about a pint of liquid, fitted with a doubly perforated cork. If sufficient caustic soda is present in the flask, the whole of the sulphuric acid—for such only is obtained when the combustion is properly conducted—is retained in the first liquid. A great portion of the sulphuric acid is even found to condense in the adapter-tube, *d*, and may be washed out, and estimated separately.

From the flask containing the caustic soda the gaseous products may be passed through a second flask or through a two-necked Woolfe's bottle, containing a few grammes of chlorate of potash, and moderately dilute hydrochloric acid; and from this into a third, containing a little pure carbonate or caustic soda. Any trace of sulphurous acid is thus oxidized into sulphuric acid, and is retained in the various solutions. And, lastly, the gases are passed through a tubulated cylinder containing a few inches of distilled water, and in its upper part large pieces of broken glass, offering a large, moist surface to the gases, and from the top cork, through a bent tube, towards the aspirator, M.

* This furnace, so well known to chemists, and so thoroughly appreciated by all those who have had occasion to use it, is so fully described in chemical manuals such as Fownes's "Manual of Chemistry," Frescnius's "Quantitative Analysis," &c., that I abstain from describing it.

I find, however, that when the mixture of gas and air is properly adjusted, *the whole of the sulphuric acid is retained in the first flask*, B, and that the Woolfe's bottles containing the oxidizing solutions and the alkali may be entirely dispensed with, retaining merely one Woolfe's bottle, *c*, containing a few grammes of the same pure soda, and the condensing-tower, T, as shown in the drawing.

It is, of course, out of the question to drive gases through a series of solutions offering a resistance of a couple of inches of water pressure, without the aid of an aspirator. When a plentiful water supply can be obtained, an aspirator may be used, constructed on the principle of the Catalonian water-blast, with a fall of water of from 8 to 10 feet. Another convenient aspirator, which, moreover, strongly recommends itself on account of its economical use of water (bulk for bulk of air, or nearly so), was devised, some short time ago, by my colleague, Mr. M'Leod, and is described in the *Journal of the Chemical Society*, March number, 1867, page 164.

A draught may also be produced by the aid of a steam-jet, on the principle of Woodward's cupola furnaces, provided the objection to the noise it makes be not too strong.

The flow of the gases is best regulated by means of a gas-tap, connected with the india-rubber tube leading to the aspirator from the condensing-tower.

The combustion must at all times be so regulated as to cause the products of combustion to pass off without showing a peculiar white smoke or cloudiness within the condensing-flasks. This is effected by having about ten times as much air as coal gas. It is quite possible to burn from 0·5 to 0·6 of a cubic foot of gas per hour, and, as only 2 or 3 cubic feet of gas have to be burnt to obtain a sufficient amount of sulphuric acid for a correct estimation, one is enabled to conduct and finish an estimation during a time of the day when the chief consumption of gas takes place—viz., in the evening.

The following tables contain the results of a series of experiments, conducted at the Laboratory of the College, upon ordinary coal gas supplied by the Chartered Gas Company:—

Table No. I.

Date of Experiment.	Cubic Feet of Gas burned during the Experiment.	Amount of Gas burned per Hour.	Sulphate of Baryta obtained, in Grammes.	Sulphur per 100 Cubic Feet of Gas, in Grains.
April 16	2·3	0·48	·2822	25·98
17	3·3	0·73	·4240	27·21
18	3·2	0·71	·4680	30·95
20	3·2	0·80	·418	27·92
23	5·	1·10	·627	26·55
24	3·2	0·96	·430	28·45
27	5·8	0·93	·8375	30·58
30	3·9	0·78	·632	34·33
May 15	3·7	0·85	·4623	26·58
17	4·	0·89	·7283	38·56
2	5·	0·79	·5967	25·27
21	5·	0·94	·5806	24·59
	*4·5	1·00	·260	12·23
22	5·	0·95	·5595	24·03
	*6·	0·90	·3902	13·78
23	5·1	1·18	·6285	26·07
	*6·5	0·93	·501	16·32
24	6·5	1·24	·683	24·19
	*7·75	0·97	·6545	17·91

Date of Experiment.	Cubic Feet of Gas burned during the Experiment.	Amount of Gas burned per Hour.	Sulphate of Baryta obtained, in Grammes.	Sulphur per 100 Cubic Feet of Gas, in Grains.
25	.. 7·2	.. 1·07	.. ·875	.. 25·75
28	.. 8·8	.. 1·34	.. ·975	.. 23·48
	..*6·5	.. 0·93	.. ·543	.. 17·70
29	.. 4·1	.. 0·75	.. ·5365	.. 28·73
June 27	.. 2·75	.. 0·42	.. ·280	.. 21·60
July 1	.. 3·5	.. 0·64	.. ·5778	.. 34·87
2	.. 3·5	.. 0·58	.. ·347	.. 20·98
3	.. 4·5	.. 0·66	.. ·462	.. 21·62
4	.. 3·25	.. 0·65	.. ·382	.. 24·89
	..*4·25	.. 0·70	.. ·2741	.. 13·6

* This mark indicates the analysis made simultaneously by the Letheby apparatus.

Table No. II.

July 5	.. 2·75	.. 0·51	.. ·2705	.. 20·00
	..†2·85	.. 0·88	.. ·3814	.. 28·35
6	.. 3·	.. 0·64	.. ·334	.. 23·50
	..†3·02	.. 1·00	.. ·3818	.. 26·79
8	.. 3·5	.. 0·56	.. ·4525	.. 27·37
	..†3·4	.. 0·97	.. ·5224	.. 32·56
9	..†4·6	.. 0·84	.. ·6971	.. 32·14
10	.. 3·	.. 0·60	.. ·3278	.. 24·05
	..†4·8	.. 0·91	.. lost	.. —
11	.. 3·	.. 0·50	.. ·3457	.. 24·32
	..†5·1	.. 0·98	.. ·7770	.. 32·25
12	.. 3·	.. 0·53	.. ·3585	.. 25·32
	..†5·	.. 1·00	.. ·7057	.. 30·00
13	.. 1·5	.. 0·52	.. ·2203	.. 31·09
	..†2·65	.. 0·93	.. ·4252	.. 33·95
Sept. 18	..†5·0	.. 0·83	.. ·7422	.. 31·46
20	.. 2·55	.. 0·50	.. ·353	.. 29·34
	..†4·5	.. 0·90	.. ·7167	.. 33·74
21	.. 1·3	.. 0·40	.. ·1815	.. 29·58

† This mark indicates the analysis made simultaneously by the soda-lime process.

On half a dozen occasions an experiment was carried on simultaneously with the apparatus devised by Dr. Letheby, and it will be seen that the results are considerably below those which were obtained at the same time by the new method; by far not so low, however, as Professor Anderson states them to be.

There can be little doubt that the so-called *lime process* is by far the most perfect method of estimating sulphur in coal gas which can be found. It consists in passing the gas over lime (best soda lime) loosely packed in a combustion-tube of hard glass, and heated strongly from the outside in a gas combustion furnace.

Unless, however, *pure* lime and *pure* soda (free from sulphuric acid) are used, little reliance can be placed upon the process. The glass, moreover, is acted upon to a disagreeable extent, silica being dissolved out; and unless the gas be sent through the tube at a very slow rate, much carbon is deposited. The sulphur products also require oxidation after being dissolved out, and it needs no little skill and experience in chemical manipulation to steer clear of all these drawbacks to an otherwise excellent method.

In order to check the above results by those obtained with the soda-lime process, I prepared some perfectly pure soda lime by calcining marble, and slacking the pure caustic lime so obtained with a solution of pure caustic soda, and I thus succeeded in getting a soda lime which was perfectly free from sulphuric acid. In order to avoid the action of the alkalies upon the glass, I used a narrow-bore gun-barrel, coated over with fire-clay made into a stiff paste by means of starch solution, or solution of British gum, and slowly dried the tube in a warm place. In this manner I succeeded in getting, to a great extent, over the above-described shortcomings of the method.

It will be seen from Table II. that the results obtained by the soda-lime process were invariably somewhat higher than those obtained by combustion of the gas over spongy platinum. I convinced myself that this arose from a slight loss of sulphuric acid, on account of its being retained by the spongy platinum, and condensed on the inside of that part of the porcelain tube nearest to the adapter-tube. It is, therefore, advisable to invariably wash out with distilled water both the porcelain tube and the cage of spongy platinum. The latter appears to retain the sulphuric acid with great pertinacity, and it requires repeated digestion with hot distilled water, slightly acidulated with hydrochloric acid, before the sulphuric acid can be dissolved out entirely. The cage of spongy platinum must be dried and ignited before it is put again into the dry porcelain tube.

If it were not for the difficulty and extreme tediousness with which the soda-lime process is attended, there can be little doubt that it would deserve the preference over any process known at present for estimating sulphur in coal gas.*

I hope at some future time to submit the two methods for the estimation of sulphur in gas to some further comparative investigation.

It has been my endeavour to provide the practical gas engineer with an apparatus for estimating the sulphur in gas which is easily manageable, and which requires but little supervision when once set going; also to obtain the sulphur at once in the shape of sulphuric acid without the aid of oxidizing agents, such as nitric acid, bromine or chlorine water, chlorate of potash, and hydrochloric acid, solution of hypochlorites, &c. The soda solution contained in the flasks is simply rinsed out into a beaker. The adapter-tube, as well as the porcelain tube and spongy platinum, is carefully rinsed out with distilled water, the liquid acidulated with hydrochloric acid, the whole heated to ebullition, and the sulphuric acid precipitated by means of chloride of barium as sulphate of baryta. The precipitate is filtered off, washed, dried, and weighed in the usual manner.

With the prospect of impending parliamentary legislation before the gas manufacturers, on the amount of sulphur which ought to be allowed to remain in London coal gas, it is clear that a method of ascertaining the total amount of sulphur compounds has become a necessity. It is for the practical gas engineer to say *how much* sulphur he can remove by the processes of purification now in use, and how much he *cannot*; but whatever standard may hereafter be fixed upon, it must always be regulated by the possible and practically attainable.

Mr. Hartley, of the gas engineering firm of Messrs. Alexander Wright and Co., of 55, Millbank Street, Westminster, whom I have to thank for the help he gave me in arranging the apparatus, is prepared to supply all the apparatus required for the new sulphur test.

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* The results obtained by the lime process by M. Albert Ellissen, of the Paris Gas-Works, and given on page 16 of the reports on the sulphur compounds present in coal gas, by Mr. Thomas G. Barlow, C.E., and M. A. Ellissen, differ so widely one from another that I am inclined to think there must be some error. I have always found the amount of sulphur obtainable by the soda-lime process, as well as by the combustion process described, to vary but little from day to day.

Register of New Patents.

1102.—John Shore, of 19 and 20, Cardigan Street, Birmingham, in the co. of Warwick, brassfounder, for "*The natural self-tighting valve-cock, the same valve to be applied to pumps, &c.*" Patent dated April 13, 1867.

This invention consists in certain improvements in the construction of valves and valve-cocks, whereby absolute freedom from leakage and other advantages are secured, such valves and valve-cocks being applicable to a great variety of purposes. An important feature connected with the invention is the manner in which the faces of the valve and its seat are formed. In simple valves, for such purposes, for instance, as those for which clack-valves are ordinarily employed, the respective faces of the valve and seat are formed with a series of concentric grooves or channels therein, the edge or ridges between such grooves or channels on one face exactly coinciding with the grooves or channels on the other face, and fitting closely therein when the two faces are brought together, thus constituting a series of concentric valves which entirely prevent the possibility of leakage. And for this reason valves thus constructed are especially adapted and valuable for pumps and other analogous purposes.

1158.—Richard Hastings Frith, of 101, Lower Gardiner Street, in the city of Dublin, civil engineer, for "*Improvements in distributing and measuring gas, steam, water, and other fluids, and in the apparatus or means employed therein.*" Patent dated April 20, 1867.

This invention relates more particularly to the distribution and measuring of fluids used for domestic purposes, such, for example, as water, and is applicable also to the distribution and measuring of gas or steam.

According to this invention, as applied to the water supply of a house or manufactory, it is proposed to combine the two pipes hitherto known as the supply and distributing pipes in one, the same pipe which admits water from the street-main into the house-cistern serving also, according to this invention, to distribute the water from the cistern to the house or to outbuildings as may be required. For this purpose a two-way screw-down cock is fitted to the supply-pipe, through which the water to the cistern is admitted for distribution, and the barrel of the cock is provided with two openings, the first communicating with the supply-pipe leading to the main, and the second with a pipe leading direct to the bottom of the cistern. By suitably adjusting the plug or valve of the two-way cock, the water may be admitted direct from the main into the cistern so as to fill the same (the mouth of the cock being at that time shut off), or the supply-pipe may be shut off and the water drawn from the cistern through the distributing-pipe for the house or other service. Should it be required to supply, in addition to the house, stables or workshops, then an extra pipe and cock must be connected with the pipe below and above the fixed cock, so as to enable a communication to be established between the pipes. The upper end of the cistern-pipe is connected with a valve-chamber containing a valve opening downwards, so that when such valve is held up it closes the aperture in the bottom of the cistern, and prevents an excess of water being admitted from the supply-pipe. The upper portion of the stem of this valve, which projects inside the cistern, is made hollow, and is perforated round its circumference so as to afford a free access of water into the hollow portion of the valve, which, for the sake of distinction, is called the "stop-valve." Underneath the bottom of this hollow spindle there is fitted a small valve or traveller also opening downwards, and fitting, when raised, close against the central aperture in the stop-valve. The stop-valve has a long spindle or rod connected to it, and extending from the bottom to the top of the cistern, where it is guided or maintained in a vertical position by a fixed support or collar through which it is free to rise and fall; on this spindle there is fitted a float, which rises and falls with the level of the water in the cistern within a certain range sufficient to effect the full opening or closing of the stop-valve in connexion therewith. This float is connected at its top and open bottom; at the latter

three stays are employed. When the cistern is full the buoyancy of the float and the pressure of the water in the street-main will maintain the stop-valve closed; that is to say, it will hold that valve tight against the under-side of the supply-aperture in the bottom of the cistern, so that no further supply from the main can be admitted therein, even when the traveller in the cock is forced downwards for that purpose. When water is drawn off from the cistern through the pipe, it first flows down through the hollow valve-spindle, the small valve or traveller readily falling and opening for that purpose so soon as the pressure from the main is cut off, and any amount of water required can be drawn from the cistern till it is emptied of its contents, and may then be refilled at one operation till the rising of the float and closing of the stop-valve prevents further ingress of the water. The stop-valve is protected from the direct pressure of the main by an annular shield formed round the interior of the valve-chamber, a series of waterways being formed in the annular space between the shield and the exterior of the chamber.

In order to measure the quantity of water drawn from the supply-cistern a moveable float is adjusted on the vertical spindle before referred to, which float is free to move up or down nearly the entire length of the spindle according to the varying position of the water level; to this float there is attached one end of a pin-jointed chain, each link of which is curved to correspond to an arc of the circumference of an overhead pulley over which the chain passes. Teeth or cogs are also formed on one edge of each link, so that the chain presents the appearance of a flexible rack; a counterweight is hung to the free end of this chain for the purpose of balancing the weight of the float. The teeth on the chain engage with the teeth of a horizontal spur-wheel, which, by means of a pall-and-ratchet arrangement, is free to revolve loosely round its shaft when the float is rising, so as not to impart motion to such shaft; but when the float descends by reason of the drawing off of the water, then the pall and ratchet, being engaged together, cause the shaft of the spur-wheel to revolve. On the top of this shaft there is fitted a pinion, which gears in the first of a train of wheels forming a counter, and thereby the amount of water drawn off is accurately registered; each inch or part of an inch in the fall of the level of the water being shown on the dial or dials of the counter, and if the superficial area of the cistern be given, the amount of water drawn off for each inch or fraction of an inch can be readily calculated.

1166.—Daniel Fryer, of 18, Carlton Square, Old Kent Road, agent, for "*Improvements in lamps.*" Provisional protection only obtained. Dated April 22, 1867.

The object of these improvements is to render lamps self-extinguishing, so that they shall burn only for a given period previously determined on, and then extinguish themselves. By means of these improvements a lamp may be so adjusted as to burn for five minutes or for an hour, or any reasonable period beyond that, when the lamp will be extinguished by a self-acting lid or cover, which shuts off the supply of oxygen. This is effected by attaching to the chimney, cylinder, shade, or globe of a lamp, a self-acting hinged lid or cover, fitting into or falling upon a seat or ring round the same, and which lid or cover is caused to fall by any self-acting means. The self-acting arrangement employed consists of a box or valve containing an inverted india-rubber ball, with a neck; the admission of air to this ball is regulated by a set or thumb screw, which presses against the neck of the ball. To the lid or cover is attached the flange which rests upon the ball through an insertion in the valve or box. The thumb or set screw regulates the admission of air quickly or slowly, as may be desired, and so soon as the ball becomes fully expanded, it overcomes the equilibrium of the lid or cover which rested upon it while empty, which effectually extinguishes the light by its fall.

1181.—Alfred Vincent Newton, of 66, Chancery Lane, in the co. of Middlesex, mechanical draughtsman, for "*Improvements in the construction of blowing and pumping engines.* A communication. Patent dated April 23, 1867.

The chief object of this invention is to produce at a cheap rate a case or chamber for blowing and pumping engines constructed on the principle of the invention patented in the name of William Edward Newton, on behalf of the present inventor, and bearing date May 9, 1866. Instead of making the case, which is elliptical, true in the lathe, so that the rotating "abutments" will fit sufficiently close to prevent practically the passage of fluid between them and the inner periphery of the case, it is now proposed to fit the case with packing strips, the use of which will involve a difference in the form of the "abutments" or the pistons which they carry, it being requisite that the abutments shall span so much space between the packing strips as to offer an effectual obstruction to the passage of the fluid past instead of its moving with the moving pistons.

The invention also relates to an economical method of renewing the boxes or bearings which support the shafts of the abutments, when by wear such renewal becomes necessary. For this purpose the limbs on the end plates of the case are recessed to receive tubular bearings for the shafts. These tubes are made of any suitable metal for bearing boxes, and are kept in position by set screws. The tubes may also be made in two halves cut longitudinally, and kept in proper position by set screws or in other suitable ways.

1191.—Thomas South, of Bridge Street, Southwark, in the co. of Surrey, gas-fitter, for "*A combined gas lighting and cooking apparatus.*" Provisional protection only obtained. Dated April 24, 1867.

For this purpose it is proposed to form a round or square stove of wrought or sheet iron, cast iron, copper, or fire-clay, or other suitable material provided with fire-bars, ash-pit, valve for regulating the draught or air supply, and chimney; the top or hot plate is formed with suitable openings and covers for the adjustment of steamers, saucepans, or s ewpans; the front of the stove is provided with lateral sliding doors, either of a circular or flat shape, meeting in the middle like folding doors; when these doors are separated the front fire-bars and fire are exposed, and meat may be roasted in front of the fire. Behind the stove a boiler or copper is fixed for the supply of hot water, but the central and upper interior portion of the stove is occupied by a retort, consisting of a cylinder closed at the bottom reaching nearly down to the fire-bars, and fitted with a top plate or lid bolted or screwed thereon by flanges; to the top plate two pipes enter, one is merely fitted to the plate to serve as an exit for the gas, the other serves as the inlet-pipe from a vessel containing gaselene, or other suitable hydrocarbon used for conversion into gas. The inlet-pipe traverses the centre of the cylindrical retort to a sufficient depth to permit of the flow of the hydrocarbon liquid on to a ball of fire-clay placed at the bottom of the retort; a perforated disc or plate of plate of fire-clay is fixed in the retort above the fire-ball, and the inlet-tube passes through the centre of this disc. At a short distance from the stove is arranged a gasometer or gasholder of the ordinary form, the cap or cover being controlled by chains passing over grooved rollers on the standards, the chains being suitably weighted; a cross bars attached to the standards, or cast or formed with them in one piece, serves to support the receptacle containing the gaselene or any other hydrocarbon capable of being volatilized by heat into hydrocarbon vapour or gas, or by conversion by the destructive distillation of heat, and from the lower part of this receptacle or vessel the inlet-tube previously mentioned conducts the hydrocarbon liquid to the retort and fire-ball; the receptacle is provided with a glass tubular gauge to indicate the level of the liquid.

1194.—Theodore Lemielle, of Valenciennes, in the empire of France, civil engineer, for "*A new improved apparatus applicable to the ventilation of mines, buildings, and other places.*" Provisional protection refused. Application dated April 25, 1867.

The ventilator consists of a cylinder receiving a rotary movement round its axles. This cylinder is provided with doors of the same height (doing duty for pistons), and of rectangular form, of which one side is in the surface of the cylinder, and parallel with its axis, which serves for oscillating centre. The opposite side describes a circular movement, which engenders another cylinder outside the other, but with a different centre. The surface engendered by this last-mentioned movement is fixed, and constitutes the casing of the ventilator, its axis is the iron beam of the ventilator, from which branch out arms which conduct the generating of the second cylinder. These doors pistons which are called the wings of the ventilator there describe a movement, which refolds them by reclining by different degrees on the cylindrical surface, and which opens them by enlarging this inclination. When the largest section comprised between two wings is formed, there is fixed on the other side of each of these limits apertures in the casing for the exit and entrance of the maximum of air that the machine will supply.

1199.—Charles Edgar Wetton and William Galsworthy, both of Grimsbury, in the co. of Northampton, for "*Improvements in apparatus for regulating the supply of liquids or fluids.*" Provisional protection only obtained. Dated April 25, 1867.

The chief object of this invention is to prevent waste of water in water-closets and otherwise, and by this apparatus the inventors are enabled to limit the supply drawn at any one time. The apparatus consists of a casing with a horizontal flexible diaphragm extending across the middle thereof, of an inlet chamber, of a delivery chamber, and of pipes and valves, all arranged and acting as hereafter described. The pipe from the main terminates in two other pipes, one of which is of small bore, and leads to the casing below the diaphragm, while the other leads to the inlet-chamber below a weighted valve. The water entering this chamber raises the valve from its seat, rises in this chamber, and passes to the delivery; from the delivery chamber a portion of it rises to the outlet-pipe, while another portion passes down to the casing above the diaphragm. A valve is carried from the middle of the diaphragm, where strengthening plates are fitted, is carried up into the delivery chamber, and is fitted with a valve. The small-bore pipe is fitted with a two-way cock, or with two cocks, and an exhaust-pipe leads therefrom to the outlet from the delivery chamber.

1217.—George Pollard, of Hayfield, in the co. of Derby, for "*Improvements in apparatus for reducing and regulating the quantity and pressure of steam, fluids, and gases.*" Patent dated April 26, 1867.

This improved reducing and regulating apparatus consists of a chest having two openings with nozzles or flanges, one communicating with the boiler in which the steam is generated, or the vessel containing the fluid or gas to be reduced, and the other leading to the engine or machine in which the steam, fluid, or gas is to be employed. In the inside of the chest there is a valve-box having an equilibrium valve, the inlet opening of the chest leading to the interior of the box, and the valve opening more or less into the chest. To the outside of the chest one, two, or more pairs of expanding and contracting discs are connected, made of such meterial or metal as to combine strength with elasticity, and connected together by short pipes or tubes. To the top or outer plate of the disc is fixed a rod, which passes through the discs and pipes to the interior of the chest, and is jointed at the bottom, and one end of which is jointed to the valve-spindle. The top of the rod which passes through the discs and pipes is jointed to a lever working on a fulcrum fixed to the chest, the said lever having pressure imparted to it, either by a weight or by a spring regulated by a screw and nut.

1229.—Emile Guenin, of Henrietta Street, in the co. of Middlesex, for "*Improvements in the disinfection and treatment of fæcal and other matters for the manufacture of manure.*" A communication. Provisional protection only obtained. Dated April 27, 1867.

This invention relates to the employment of chloride of manganese, forming the residue of the manufacture of chlorine for the disinfection of fæcal matters, and consists in saturating the above with lime combined with chloride of magnesium, whereby fæcal matters may be instantaneously and permanently disinfected, and their fertilizing products concentrated in a small space.

1235.—Jacob Bird, of Bromborough Pool, in the co. of Chester, engineer, for "*Improvements in the construction of buckets for air and other pumps.*" Patent dated April 29, 1867.

The main object of this invention is to provide a metallic bucket or piston for single-acting pumps, which shall expand and fit tight against the inner surface of the cylinder in the up stroke, and contract in the down stroke, so as there to work with a minimum of friction. In air-pumps, the bucket or piston-rod, the bucket-frame or piston, and the valve-guard, are made and connected in any ordinary or suitable manner. The ring of the bucket or piston is cut obliquely; it is cylindrical for the greatest part of its length on its outer circumference, but inside and concentric to its circumference it is formed with an inclined surface, the smallest diameter being at the bottom. The perforating plate or seating and valve are of the ordinary form, but according to this invention they are shipped on to the rod, and are free to move thereon a short distance up and down for the purpose hereinafter mentioned. To the under-side of the said perforated plate there is attached an expansion split ring, wedge like in section, the small edge of which passes downwards, and rests on spiral or other springs in or on the bucket-frame, whilst its sloping side rests against the inclined surface formed on the bucket-ring mentioned above. A semi-circular packing piece or pieces, with obliquely cut or other terminations, encircle the expansion-ring and part of the bucket-ring.

1248.—Robert Wood Ridley, of Birmingham, in the co. of Warwick, engineer, and John Withers, of Handsworth, in the co. of Stafford, agent, for "*Improvements in indicating measure-taps for drawing off liquids.*" Patent dated April 30, 1867.

The first part of the invention consists substantially of an inner hollow cylindrical, or by preference slightly conical body or chamber, working with exactness in an outer casing of corresponding shape placed horizontally in a suitable framework; the said outer casing has two holes or apertures of corresponding size provided therein, one being the inlet passage, and being by preference at the top part of the casing, the other the outlet passage, being by preference at the bottom of the casing. This inner body or chamber is provided with one or more convenient apertures, and on being turned round so as to allow one of its apertures to correspond with the inlet passage provided in the outer casing, the liquid is free to flow until the inner chamber is filled, and the chamber being then turned so as to allow one of its apertures to correspond with the outlet passage in the outer casing the liquid will discharge and run itself off. In this manner it will be obvious that only one of the passages can be open at the same time—*i.e.*, when the inlet passage is open the outlet passage must be closed, and *vice versâ*. The inner body or chamber herein described is supposed to be equal in capacity to some known liquid measure, so that each time it is filled and emptied a certain known quantity of liquid will have passed through.

The second part of the invention has reference to the manner of indicating the quantity of liquid which has been drawn off in the manner hereinafter described. The inner body or chamber is turned round as required by a handle affixed to one end thereof. Upon its other end is affixed a small spindle or axis of just sufficient length to project through the end of the outer casing, upon the end of which is fixed a plain wheel with a spring catch attached thereto, and which is so arranged that when put in motion by the turning of the inner chamber it will act upon a ratchet wheel attached to the indicator, upon the axis of which is a pinion wheel giving motion to a suitable train of wheels somewhat after the manner of the counter of a gas-meter. On the axis of the said wheels are placed hands or pointers, which, by means of suitable indices or dials, indicate the quantity of liquid drawn off.

1253.—John Marshall, of Wednesbury, in the co. of Stafford, iron-master, for "*Improvements in the manufacture of gun-barrels and ordnance, which improvements are also applicable to the manufacture of iron and steel tubes for various purposes.*" Provisional protection only obtained. Dated April 30, 1867.

This invention consists in making moulds to be converted into gun-barrels, ordnance, or tubes, by rolling or otherwise forming pieces of iron or steel of a suitable shape or size, and afterwards drilling a hole in the axis of each of the said pieces. The moulds so formed are then ready to be rolled, hammered, or drawn into gun-barrels, ordnance, or tubes. By this means greater uniformity of size in the bore is readily obtained than by the ordinary methods of manufacture. The invention may be applied to the manufacture of tubes for gas and water, and for other purposes.

1272.—Peter Salmon, of 6, Great Smith Street, Westminster, in the co. of Middlesex, for "*Improvements in the making and holding of gas for illuminating, lighting, warming, cooking, raising of steam, or other purposes.*" Provisional protection only obtained. Dated May 2, 1867.

This invention has for its object the production of gas to give a clear bright light for illuminating and lighting, also of a flame or flames for warming, cooking, raising of steam, or other purposes, and of dry gasholders or receivers to contain the said gases, and consists, in the first place, in the admission of a jet or jets of superheated steam into a closed vessel filled or partly filled with spirit, oil, or other fatty substance, combined with or separated from the warming or the raising of the temperature of the said spirit, oil, or other fatty matter by steam surface heat, either applied to the vessel itself or by coils or tubes fitted in the interior thereof. These vessels or gas-generators may be combined with a steam-boiler or vessel for raising steam from water in one apparatus, or used separately when a supply of steam is at hand. If the steam-boiler is wished to be increased in its generating power, it is fitted in the interior with coils or tubes, through which the flames and hot air circulate or pass on their way to the chimney, and the steam is superheated by inserting tubes or coils of pipes in the furnace or flues of the apparatus, boiler, or contiguous boiler through which the steam passes on its way to the gas-generator containing spirit, oil, or other fatty matter. These vessels or gas-generators are fitted with test-burners, safety-valves, pressure-gauges, regulating-valves, supply-tubes, and stop-cocks when wished, and the boiler for raising the steam has also the usual appliances of safety-valve, gauge-cock, gauge-glass, pressure-gauge, supply-tube, and stop-cocks.

The invention consists, in the second place, in the mixing or infusing of the superheated steam, prepared in the manner described, with the vapour or gas obtained from spirit, oil, or other fatty matter, evaporated by fire, heat, or flame from gas or oil, previous to being conducted to the burners, or gasholders, or receivers.

The invention consists, in the third place, in the use of dry gasholders or receivers, made to work without the use of water. This is effected by inserting a gas-tight division in the holder or receiver, consisting of an iron or other plate of the exact shape of the interior of the same, round the edges of which plate india-rubber or other flexible material is fixed, to make it gas-tight in traversing the interior of the said holder or receiver. The said division-plate is mounted with one or more polished rods, which pass through the top or cover of the said holder or receiver, on which are fixed stuffing-boxes, to make the passage of the rods air-tight. The said rod or rods not only serve as guides, but also act as indicators of the position of the division-plate, whereby it is ascertained, at any time, the quantity of gas contained in the holder or receiver as it rises or falls with the increase or decrease of the supply of gas, and is weighted on top to suit the pressure of gas required.

APPLICATIONS FOR LETTERS PATENT.

3623.—Edward Field, of Chandos Chambers, Adelphi, in the city of Westminster, consulting engineer, and Frederic Pelham Warren, of Norwood, in the co. of Surrey, commander in the Royal Navy, for "*An improved cowl for chimney-tops.*" Dec. 20, 1867.

3624.—Levi Lincoln Tower, of the state of Massachusetts, U.S.A., for "*A new and useful invention having reference to faucets and vessels for measuring liquids.*" A communication. (Complete specification.) Dec. 20, 1867.

3626.—John Thomas Kershaw, of 90, St. Paul's Road, Islington, in the co. of Middlesex, surveyor, for "*An improved ventilator.*" (Complete specification.) Dec. 21, 1867.

3630.—William Walker, of Rochdale, in the co. of Lancaster, and Edward Holt, of Newton Heath, in the same co., for "*Improvements in direct-acting double-action steam-pumps.*" Dec. 21, 1867.

3656.—Christopher Pottinger, of Anstruther, in the co. of Fife, N.B., shipbuilder, for "*Improvements in motive-power engines, part of which improvements are applicable to the arrangement and construction of pumps for raising and forcing liquids, fluids, and other substances generally.*" Dec. 24, 1867.

3675.—Tristie James Ellis, of Abingdon Street, in the city of Westminster, civil engineer, for "*Improvements in the construction and arrangement of apparatus for carburetting gas and atmospheric air.*" Dec. 27, 1867.

3682.—John William Lewis, of the town and co. of Newcastle-upon-Tyne, engineer, for "*Improvements in warming, ventilating, and heating apparatus.*" Dec. 27, 1867.

3685.—Jacob Goodfellow, of the Atlas Works, Blackburn, in the co. of Lancaster, engineer, for "*Improvements in metallic pistons for steam-cylinders, air-cylinders, or pumps.*" Dec. 28, 1867.

3687.—William Fryer, of Birmingham, in the co. of Warwick, plumber, for "*Improvements in self-closing taps.*" Dec. 28, 1867.

3696.—Charles Churchill, of Norwood, in the co. of Surrey, merchant, for "*An improved gas-burner.*" A communication. Dec. 28, 1867.

3706.—Marc Antoine François Mennons, of the firm of Mennons and Telescheff, of 8, Southampton Buildings, in the co. of Middlesex, and 53, Rue de la Chaussée d'Antin, Paris, in the empire of France, patent agents, for "*Improvements in the mode of and apparatus for combining the vapours of liquid hydrocarbons with oxygen and hydrogen, and burning the mixture as fuel.*" A communication. Dec. 31, 1867.

GRANTS OF PROVISIONAL PROTECTION.

3457.—William Anthony Herring, of Chertsey, in the co. of Surrey, engineer and ironfounder, for "*Improvements in apparatus for warming buildings in which high-pressure steam-engines are employed.*" Dec. 4, 1867.

3491.—Charles Mathew Barker, of 12, Kennington Park Road, in the co. of Surrey, engineer, for "*Improvements in socket and flange spigot-pipes.*" Dec. 7, 1867.

3501.—Henry Bessemer, of Queen Street Place, Cannon Street, in the City of London, for "*Improvements in the manufacture of fire-bricks, tiles, and solid or hollow fire-lumps, and in the manufacture of retorts, pipes, crucibles, or other hollow vessels or moulds required to resist a high degree of heat, and also in the manufacture of ornamental bricks, tiles, quarries, trusses, bosses, vases, busts, figures, columns, capitals, bases, cornices, copings, tablets, finials, and other articles of an ornamental character employed in building and in architectural decorations.*" Dec. 9, 1867.

3503.—Cornelius Kerby, of St. Dunstan's Hill, in the City of London, for "*Improved apparatus for filtering liquids.*" Dec. 10, 1867.

3527.—John Ward, of Port Glasgow, in the co. of Renfrew, N.B., for "*Improvements in lamps to be used under water.*" Dec. 12, 1867.

3531.—Ephraim Death, of Leicester, in the co. of Leicester, engineer, for "*Improvements in steam-pumps.*" Dec. 12, 1867.

3554.—Henry Atkinson, of 33, Wharf Road, City Road, in the co. of Middlesex, for "*Improvements in gas-retort ovens and furnaces.*" A communication. Dec. 14, 1867.

3563.—Edward Hammond Bentall, of Heybridge, near Maldon, in the co. of Essex, agricultural implement manufacturer, for "*Improved apparatus for controlling the draught of water from constant-supply pipes.*" Dec. 14, 1867.

3572.—James Eglinton Anderson Gwynne, of Essex Street Works, Strand, in the co. of Middlesex, engineer, for "*Improvements in sinking tubes or cylinders for obtaining and raising water, and in the apparatus for effecting the same.*" Dec. 16, 1867.

3587.—Ernest Marie Du Boys, of Paris, France, Government engineer, for "*Improvements in liquid-meters or apparatus for measuring and registering the volume of water or other liquid flowing under pressure through pipes or ducts.*" Dec. 17, 1867.

3590.—William Armand Gilbee, trading under the name or style of L. de Fontainemoreau, of 4, South Street, Finsbury, in the co. of Middlesex, patent agent, for "*Improvements in the method of and apparatus for raising water.*" A communication. Dec. 17, 1867.

3591.—William Edward Newton, of 66, Chancery Lane, in the co. of Middlesex, civil engineer, for "*An improved method of and apparatus for the manufacture of tinned leaden pipes.*" A communication. Dec. 17, 1867.

INVENTIONS PROTECTED FOR SIX MONTHS BY THE DEPOSIT OF A COMPLETE SPECIFICATION.

3624.—Levi Lincoln Tower, of the state of Massachusetts, U.S.A., for "*An invention having reference to faucets and vessels measuring liquids.*" A communication. Dec. 20, 1867.

3626.—John Thomas Kershaw, of 90, St. Paul's Road, Islington, in the co. of Middlesex, surveyor, for "*An improved ventilator.*" Dec. 21, 1867.

NOTICES TO PROCEED.

2307.—Frederic Hale Holmes, at present residing in Paris, in the empire of France, engineer, for "*Improvements in apparatus for the production of the electric light.*" Aug. 10, 1867.

2314.—Arthur M'Dougall, of the firm of M'Dougall Brothers, of the city of Manchester, manufacturing chemist, for "*Improvements in the extraction and separation of the sulphur contained in products resulting from the alternate exposure of certain metallic oxides to gases containing sulphuretted hydrogen, and to oxygen.*" Aug. 12, 1867.

2334.—William Bradshaw Leachman and John Holroyd, both of Leeds, in the co. of York, for "*Improved apparatus for pumping fluids.*" Aug. 14, 1867.

2414.—James Lee Norton, of Belle Sauvage Yard, Ludgate Hill, in the City of London, and George Hawksley, of Montrose Villas, Caledonian Road, in the co. of Middlesex, engineer, for "*Improvements in apparatus and means for burning combustible liquids, vapours, and gases to obtain heat and light therefrom.*" Aug. 22, 1867.

2422.—John Varley, of 57, Bloomsfield Road, Plumstead, in the co. of Kent, for "*Improvements in apparatus for raising, supplying, and measuring water to steam-boilers, part of which invention is also applicable to measuring water for other purposes.*" Aug. 23, 1867.

2434.—William Berry, of 4, Willow Place, Stamford Hill, in the co. of Middlesex, for "*Improvements in the means or apparatus for removing mud, drift, or other rubbish from streets and other places.*" Aug. 24, 1867.

3110.—Herbert Allman, of Ampthill Square, in the co. of Middlesex, civil engineer, and Frederic Newton Gisborne, of 445, West Strand, in the said co., civil engineer and electrician, for "*Improvements in apparatus to be applied to lamps and burners for the more perfect combustion of carburetted gases.*" Nov. 5, 1867.

3361.—James Sutcliffe Smith, of Bacup, in the co. of Lancaster, manufacturer, for "*Certain improvements in apparatus for ventilating buildings, and other similar purposes.*" Nov. 27, 1867.

Legal Intelligence.

COURT OF CHANCERY.

Dec. 16, 17, and 18, 1867.

(*Before the Lords Justices.*)

IMPERIAL GASLIGHT AND COKE COMPANY *v.* THE WEST LONDON JUNCTION GAS COMPANY, LIMITED, AND THE GREAT WESTERN RAILWAY COMPANY.

Mr. Bacon, Q.C., and Mr. Bagshawe appeared for the plaintiffs; Mr. Druce, Q.C., Mr. T. Hughes, and Mr. W. P. Dickins for the West London Junction Gas Company; Mr. Osborne, Q.C., and Mr. T. Stevens for the Great Western Railway Company.

This was an appeal from the Vice-Chancellor Stuart, and the question in dispute arose upon the construction of the Metropolis Gas Act, 1860. The plaintiffs, by their bill, complained that the defendants had infringed the rights given to them by the provisions of that Act, and prayed that the West London Junction Gas Company might be restrained by injunction from supplying gas for sale to the Great Western Railway Company, or to any other company or person within the plaintiffs district, and that the Great Western Railway Company might be restrained from continuing to use or receive within the plaintiffs district any gas supplied for sale by the West London Junction Gas Company, and from reselling or supplying for sale to any other company or person within the plaintiffs district any gas whatsoever. The Vice-Chancellor dismissed the bill with costs, and the plaintiffs now appealed.

Mr. Bacon said this suit proceeded upon an Act of Parliament (23 & 24 Vic., c. 135) passed for the purpose of regulating the supply of gas in the metropolis. By that Act the supply was limited to the companies therein mentioned, and it would be needful to call their lordships special attention at once to some of the provisions therein made in the first instance. The preamble recited the incorporation of the several metropolitan gas companies, and then proceeded—"The said companies, instead of supplying gas by several mains in the same district, have agreed, as far as possible, each one to confine its supply to a separate district, in order to economize capital and avoid the too frequent opening of the public streets." By the interpretation clause the expression "gas company" meant and included any and every company and any person or persons supplying gas within the limits of the Act. The 5th clause defined the limits of the Act, and the 6th clause sanctioned the assignment of districts to the companies, subject to triennial revision; it then went on to say—"And no other company or person than the company to whom such limits are for the time being assigned, or shall hereafter be assigned, shall supply gas for sale within the said limits unless authorized by Parliament so to do." The allegation of the plaintiffs in the present suit was that the West London Junction Gas Company had infringed this Act of Parliament by supplying gas within their district. The 17th section required the several companies to provide pipes and to supply gas or meters, and by the 22nd clause it was made a matter of obligation to light the public lamps in all streets within their respective districts when required by the local authority. Provision was then made for securing a certain standard of illuminating power; but it was unnecessary to trouble the court with reference to this or the subsequent provisions down to the 54th, which section it became extremely important to consider—"Nothing in this Act contained shall avoid, prejudice, or impair any of the powers now exercised by or vested in the Metropolitan Board of Works, or in the Commissioners of Sewers of the City of London and the liberties thereof, or any powers now vested in any local authority within the metropolis, or any powers now exercised or possessed in respect of the manufacture or supply of gas within the metropolis by any railway company, or by any other person or persons making or supplying gas for his or their own use, and not making or supplying gas to the public as a trade or business."

Lord Justice Lord Cairns remarked that this accorded with the provision in the 6th clause, which was against any other company or person supplying gas for sale within the limits of either of the companies.

Mr. Bacon said the complaint in this case was that the defendants, the West London Junction Company, had supplied gas within the plaintiffs limits "as a trade or business." The places named in the bill were the Paddington terminus of the Great Western Railway, the Bishop's Road station of the Metropolitan Railway, and the Great Western Hotel, which was the property of the Great Western Railway Company, all of which places were within the district assigned to the plaintiffs. The West London Junction Gas Company had not commenced business at the time of the passing of the Act of 1860, but shortly before or shortly afterwards they erected certain small gas-works at Wormwood Scrubs, from which, "as a trade or business," they had supplied the Great Western Railway Company in their engine-sheds up to the present time, and also to their passenger station from 1861 to 1863, when it was there discontinued. They did not supply gas to any other parties than the Great Western Company, nor did they until recently endeavour to do so. The plaintiffs alleged that they were for a long time in ignorance of the existence of the company, and believed the works at Wormwood Scrubs were carried on by the Great Western Railway Company, and that the gas manufactured there was for their own use, and therefore within the provisions of the 54th section of the Metropolis Gas Act. The bill stated that in 1862 the Great Western Company began to work the Metropolitan Railway, and the West London Gas Company commenced to supply their stations and the carriages on the line with gas either direct from the works at Wormwood Scrubs, or from within the Great Western terminus. In December, 1862, the Great Western Company and the West London Company finding that the gas-works of the latter company were insufficient for the supply of the Great Western and Metropolitan Railways, determined that until the works could be increased the plaintiffs should be required to supply gas as before to the passenger station of the Great Western Company. In the letter which they addressed to the plaintiffs conveying that request, the Great Western Company stated that the gas supplied to the metropolitan station was "taken from their own make." Ever since January, 1863, the plaintiffs had supplied the Great Western station with gas. In the meantime the directors of the Great Western Hotel Company having arranged with the West London Company to buy their gas from them, wrote to the plaintiffs and stated that they had arranged with the Great Western Company for a supply, and therefore should not require a further supply from the plaintiffs. This letter confirmed the plaintiffs in their erroneous opinion that the gas was supplied by the Great Western Company; but inasmuch as the supply to the hotel was an infringement of the Metropolis Gas Act, they wrote to the directors of the hotel calling their attention to the fact. The works of the West London Company not being sufficient as yet for the supply of the hotel, the plaintiffs company, notwithstanding notice to the contrary, had continued up to the present time to furnish gas as before.

Lord Justice Rolt inquired whether it was a question of law or of fact which was in dispute between the parties.

Mr. Bacon said there could be no dispute as to the facts. The question would be upon the Act of Parliament, whether the West London Company were at liberty to supply for sale, and as a matter of business, the gas now required by the Great Western Railway Company and likely to be required by the Great Western Hotel Company.

Mr. Druce, in answer to his lordship's question, said there were very grave questions of fact which must come before the court ere the question of law was decided.

Mr. Bacon, referring still to the allegations in the bill, said it appeared that a meeting of the shareholders in the West London Gas Company was held on the 22nd of September, 1863, and a report made to that meeting by one of their managers, a Mr. Christie, fell into the plaintiffs hands. That report stated that the mains ordered by the company to supply a considerably increased demand were nearly completed; and at the meeting Mr. Christie told the shareholders he had no doubt the supply of gas to the Great Western Hotel and the Metropolitan Railway would increase the income of the company 30 per cent. That report having been made public, the plaintiffs found out how the facts were. They ascertained, also, by inspecting the Memorandum of Association, that the object of the company was to purchase the rights and interests of a Mr. Vaughan, under an agreement made between him and the Great Western Railway Company, and also to purchase certain gas-works at Wormwood Scrubs, held by him on lease or under contract from the Great Western Company, and for supplying gas to the Great Western Company, or to any other persons, district, or company whatever. The plaintiffs alleged that they then for the first time became aware of the fact that their exclusive right to supply gas in the district was being violated, and thereupon a correspondence ensued between the parties.

Lord Justice Lord Cairns: Do the defendants supply any one but the Great Western Railway and the Great Western Hotel, and the Metropolitan Railway?

Mr. Bacon: Not that I am aware of.

Lord Justice Lord Cairns: Do you complain of the supply to all, or only the Metropolitan Railway?

Mr. Bacon: To the Metropolitan Railway, to the Great Western Railway, and to the hotel.

Lord Justice Rolt: Are they all defendants?

Mr. Bacon: They are so treated.

Mr. Druce: As a matter of fact, we have not supplied any one but the Great Western Company, though they have done what they pleased with the gas.

Mr. Osborne: We have been supplied under a contract made in 1858, under which we agreed to find the land, and to lease it to the parties with whom we contracted, to have the exclusive enjoyment of the gas manufactured by them, at a certain price, for the Paddington station, the hotel, and the Bishop's Road station, which, no doubt, is a part of the Great Western station.

Mr. BACON: No doubt there is an arrangement of the kind. The West London Company supply the gas to the Great Western Railway Company, and they claim the right to supply it to the Great Western Hotel Company, so that the Act of Parliament is directly infringed in both instances.

Lord Justice Lord CAIRNS: How do you read the 54th section of the Act—"Nothing in this Act contained shall avoid, prejudice, or impair any of the powers exercised or possessed in respect of the manufacture or supply of gas within the metropolis by any railway company, or by any other person or persons making or supplying gas for his or their own use, and not making or supplying gas to the public as a trade or business." Do you read that as applying to the railway company?

Mr. BACON: I think the last words in the sentence apply to everything that has gone before.

Lord Justice Lord CAIRNS: You read it, "by any railway company making or supplying gas for their own use, and not making or supplying gas to the public as a trade or business"?

Mr. BACON: I think that is necessarily and unavoidably the construction.

Lord Justice Lord CAIRNS: How can a railway company make or supply gas to the public as a trade or business?

Mr. BACON said the Great Western Railway Company proposed to supply the hotel with gas, and to do so at a profit, and that could only be as a trade or business. The plaintiffs complained that the Great Western Company had not only bought gas from the West London Company with full notice from them that it was an infringement of the Act, but had resold to the Metropolitan Company, when they worked that railway, at an advanced price, the gas so obtained. The bill asked for an injunction to restrain them from a further violation of the Act of Parliament; also an account of the profits made by the defendants up to the present time.

Mr. DRUCE read the answer to the bill on the part of the West London Company, in which they stated that, in the early part of 1858, the Great Western Railway Company, being dissatisfied with the price at which they were supplied with gas by the Imperial Gas Company, entered into an arrangement with a Mr. Vaughan, that he should, at his own cost, within the space of twelve months, erect all the necessary buildings, gasholders, and works, for the manufacture and supply of a sufficient quantity of gas for the purposes of their station at Paddington. The gas so manufactured and supplied was to be of the illuminating power therein mentioned, and the price 2s. 10½d. per 1000 cubic feet. The railway company undertook that, so long as Vaughan supplied them properly, they would not take a supply from any other person. The quantity that he was required to furnish was 105,000 cubic feet per night. The company gave a site on which to erect the works, and by deed they leased to Vaughan the land upon which the works were to be erected, subject to the usual covenants, and with a proviso that he should not carry on upon such land any trade or business whatever except that of a manufactory of gas for the use of the company. Vaughan began to erect the works, but not having sufficient capital to complete them, he applied to a person named Vavasœur to assist him. Vavasœur advanced money for the purpose, and the lease was assigned to him with the special licence of the Great Western Company. In 1859 an arrangement was made by Vavasœur for the formation of a joint-stock company, which was registered on the 15th of September in that year. After that Vavasœur continued to assist Vaughan, but the works were not completed on the 7th of February, 1860. An agreement was then come to between Vaughan, Vavasœur, and the Great Western Railway Company, whereby it was arranged that Vaughan and Vavasœur should proceed with all possible expedition to complete the works mentioned in the original contract, so that they should be in full operation by the 1st of May, 1860, the company to advance the money necessary to complete the works, including the contracts for the pipes; the whole amount not to exceed £3000, and to have a lien or charge upon the works or lease, and to be at liberty to deduct monthly payments for the advances. On the 8th of February, 1860, a further deed was made between Vavasœur and the West London Junction Company, under which Vavasœur agreed to sell to the latter all his rights under the agreement of August, 1858, also his interest under the lease; and he agreed, when requested by the company, at his own expense to use his best endeavours to get a licence to assign. The works were carried on by Vaughan until May 29, 1860, at which date they were sufficiently advanced to enable a supply of gas to be given to the Great Western Company according to the original agreement. Vaughan superintended the manufacture until December, 1861, and supplied gas to the railway; and after May 29, 1860, the extension of the works proceeded with further advances made by the Great Western Company. In September, 1861, the latter took possession of the works at Wormwood Scrubs, and until some time in 1862 manufactured the gas they required there. Afterwards a new arrangement and further advances of money were made; Messrs. Christie and Stephenson were appointed joint managers by the gas company and accepted as such by the Great Western Company. The defendants answer further set out the subsequent proceedings of the parties, and stated that the works were now in a state of efficiency, capable of supplying the 105,000 feet of gas of the quality required by the railway; that they had expended upon the works £12,835, exclusive of £3585 advanced by the Great Western Company up to 1863, and that of this sum £3000 had been expended since December, 1862, and £5000 since June, 1860; that the meter through which they supply the gas is at the works at Wormwood Scrubs; that the after distribution of the gas is made by the railway company and not by them, and that their business had never been to manufacture gas for the public, but for the Great Western Company. They stated, moreover, that they commenced business before the passing of the Act of 1860; they admitted that their company was not mentioned in that Act, and they did not claim to be entitled to supply gas to the public as a trade or business; that the supply by them to the passenger terminus at Paddington was discontinued in 1863; that they never supplied any party or parties with gas other than the Great Western, not even the Metropolitan Railway, except through them; that all payments for gas were made by the Great Western Company, by whom also the supply was cut off or put on from time to time; that the existence of their company was never concealed from the public, the name of the company appearing on the door of their office and in the Post Office Directory, and that the meetings of their shareholders were attended by the reporter of the JOURNAL OF GAS LIGHTING; so that the plaintiffs could not be ignorant of the existence of the company; moreover, that their late secretary, in giving evidence before the committee of the House of Commons on the Metropolis Gas Bill, spoke of them as "this little company;" and further, that in the JOURNAL OF GAS LIGHTING of the 21st of April, 1863, appeared a report which fully disclosed the nature of their business, and upon the same page appeared the report of the Imperial Company. They alleged that the Bishop's Road station belonged to the Great Western Railway, and that up to 1863 the Metropolitan line was worked by them; that they (the defendants) had never supplied the Great Western Hotel with gas, or had any contract with them to do so, and they denied that the plaintiffs had any reasonable belief respecting a supply to them.

Mr. OSBORNE proceeded to read the answer of the Great Western Railway Company. It stated that the Great Western Hotel belonged to the hotel company under lease from the defendants, it having been erected and partly furnished by the latter under the provisions of their Act of 1851.

Lord Justice Lord CAIRNS inquired whether that Act authorized the railway company to supply gas to the hotel.

Mr. OSBORNE said it did. The Act recited that an hotel, with stables, &c., at the Paddington terminus would be a great advantage, and afford accommodation much needed by the public, and that it was desirable such hotel should be placed under the control of the company; and it was enacted that it should be competent to the company to appropriate a site at or near to the station for the purpose, and either to erect the hotel themselves or make such arrangement for its erection as they might see fit, and that it should be lawful for them to demise the hotel and premises, at such rent as they pleased. The defendants stated that in or about the year 1858, long before the passing of the Metropolis Gas Act, the defendants, whose station at Paddington, including the hotel, was supplied by the plaintiffs, entered into an arrangement with Mr. Vaughan for the construction, and management of gas-works upon the private lands of the company, such gas to be used by them, and also to be supplied in such quantities as might be required for the hotel; and they covenanted with Mr. Vaughan that, so long as he continued to manufacture and supply gas, and in all other respects conformed to the stipulations of the agreement, they would not take gas from any one else, Vaughan undertaking that he would not manufacture or supply gas from those works to any other person or persons whatsoever.

Mr. BACON said the plaintiffs case was that the defendants had infringed the Act of Parliament in supplying gas for sale within the district assigned to the plaintiffs. The Great Western Railway Company alleged that they were only carrying out an agreement they had entered into with the West London Company prior to the passing of the Act of 1860.

Lord Justice Lord CAIRNS: The question turns entirely upon the 54th section of that Act, and the words therein, "making or supplying gas as a trade or business."

Mr. BACON: There cannot be a doubt that it does turn upon that section, because the facts are exceedingly simple. The Great Western Company in the course of the correspondence spoke of the gas supplied from Wormwood Scrubs as being gas of their own make, and the plaintiffs were led to believe that the gas used at the Paddington terminus and on the Metropolitan Railway was in fact made by themselves, but it turned out not to be so. As this has been going on for some time, I think the plaintiffs are bound to tell you why they were not here before.

Lord Justice Lord CAIRNS: I suppose the Great Western Company have not had, from the Wormwood Scrubs works, more gas than the maximum quantity mentioned in the agreement.

Mr. BACON said he had no reason to suppose that they had. The West London Company was a company formed for the supply of gas in the way of trade or business, and the fact that they were under an agreement to supply the Great Western Company on certain terms beneficial to the latter, did not at all affect the case.

Lord Justice ROLT said the West London Company appeared to have been formed in September, 1859. He supposed the Articles of Association were stated in the bill.

Mr. BACON said they were, and the company was said to be "a company formed for the purpose of supplying gas to the Great Western Railway Company, or to any other persons, company, or district whatsoever." He contended that they had no right whatever so to supply gas within the plaintiffs district. He did not mean to say that under the 54th section of the Act of 1860 the Great Western Company were not at liberty to manufacture gas for themselves.

Lord Justice Lord CAIRNS: Does not the 54th section say more than that? "Nothing in this Act contained shall avoid, prejudice, or impair any powers now exercised or possessed in respect of the manufacture or supply of gas within the metropolis by any railway company." Suppose the Great Western Company possessed at the time power to manufacture a maximum of so many thousand feet a day.

Mr. BACON: They would not be entitled under the Act of Parliament to sell or make a profit of it, or apply it to any other purpose than their own railway station. Your lordships have been told that the Great Western Hotel was formed under the powers of the Great Western Railway Company's Act, and so it was; but there is not one word in that Act, or in the lease, which authorized the railway company to supply gas to the hotel. The language of the 54th section of the Act of 1860 is—"Any powers now exercised or possessed in respect of the manufacture or supply of gas." Manufacture there was none; supply there was none. It is said the railway company have undertaken to supply the hotel, and they are entitled to do it because they are the landlords of the hotel. But they must be paid for it, either in the shape of direct payment or an addition to the rent.

Lord Justice Lord CAIRNS: The contract of the 9th of August, 1858, gave the Great Western Company power to require a maximum supply of gas, which they might use for the hotel or any other purpose.

Mr. BACON: No, my lord. If, even for the purpose of this discussion, we admit that they were entitled to buy as much gas as they thought fit, the only right that would give them would be the right to use it themselves.

Lord Justice Lord CAIRNS: I quite understand your argument as to the Act of Parliament, but putting the Act of Parliament out of the question, as between themselves and the West London works, they had, under the contract of 1858, the right to demand a supply of gas for the Great Western Hotel Company.

Mr. BACON: No; not for the hotel.

Mr. DRUCE: Yes; clearly. It is stated so.

Mr. BACON: As between themselves and the company, yes; but whatever that might have been, the right has never been exercised or acted upon. The important question in this suit is as to the hotel company. The plaintiffs never would have sought to interfere with the way in which the Great Western Railway Company procured the gas they wanted for their own use, but they do complain that that company should buy gas at Wormwood Scrubs, and sell it in London, within the plaintiffs district, to the hotel company. That is the whole substance of the case. The West London Company, in their answer, insist that what they have done is no violation of the Act of Parliament. They admit that the Great Western Company have been saving a great expenditure by taking gas from them at the rate of 2s. 10d. per 1000 feet, but they say that their company have not made much profit thereby. They contend that they are entitled to supply the Great Western Company, and, if required, to supply the hotel according to the contract, and they claim to be entitled to do so upon a larger scale as the demand is made upon them.

Lord Justice Lord CAIRNS: Is there in the contract or agreement any evidence that the Great Western Railway Company were to furnish the hotel with gas?

Mr. BACON: As I understand it, there is no stipulation in the agreement or lease made with the hotel company that the railway company shall supply

them with gas. The arrangement made between the company and the successive manufacturers of gas at Wormwood Scrubs cannot, as I conceive, touch the question submitted by the plaintiffs in this suit. That question is solely to be determined upon a construction of the Act of Parliament.

Lord Justice Lord CAIRNS: What embarrasses us is this: suppose the position of any railway company in London, at the time the Act of Parliament was passed, to be that they had armed themselves with a penal contract with some person to manufacture gas and supply their company at their station, and also more than what their station would require, the company to be at liberty to dispose of the surplus to some other large manufactory or establishment; then this Act of Parliament is passed, which provides that no power possessed or exercised by a railway company at that time for the manufacture or supply of gas should be prejudiced; would that knock upon the head the antecedent agreement and their powers under it, even though that antecedent agreement led to the supply of a building other than a railway station?

Mr. BACON: I do not hesitate to answer that question, and say that it would. The fact that they have entered into a contract, no matter upon what terms, to buy a certain quantity if they can get it, gives them no power to sell it to any one else. The plaintiffs would not have cared where the railway company got their gas from, but, when they assume a right to sell the gas—for it can only be for sale, and on payment of some sort—and that the right to do so is asserted, the plaintiffs submit that this is a violation of the Act of Parliament. The scope and object of the Act is no doubt to confer a monopoly, but a monopoly for a public benefit.

Lord Justice Lord CAIRNS: Is not also the scope of the Act of Parliament not to interfere with any arrangements which railway companies, at the time of the passing of the Act, had made for supplying themselves with gas, whether they do it by their own servants or whether they set up a commission agent?

Mr. BACON: It cannot be that, in spite of this Act of Parliament, the railways can set up works, and manufacture gas for other people.

Lord Justice Lord CAIRNS: It may well have been that Parliament was satisfied that, in the case of a railway company, it would be *ultra vires*—against its constitution—to sell gas right and left without any qualification, and therefore it was not necessary to guard against it; but they may have said—"Let the railway companies remain possessed of any powers they may have legitimately acquired."

Mr. BACON: Admit, for the sake of argument, that Parliament would leave the railway companies to get their gas for the use of the company wherever they could, and upon whatever terms they thought fit; but it never was the intention of the Act that they should become dealers in gas, however cheap they might be able to obtain it.

Mr. BAGSHAWE followed on the same side, and contended that the proposed supply of gas by one or both the defendants to the hotel company would be a substantial and most material interference with the plaintiffs monopoly to supply gas in the district—such an interference as it would be the duty of the court to restrain, if possible.

Mr. DRUCE, on behalf of the West London Junction Gas Company, said he collected from the observations of his learned friends that they intended to modify what the prayer of the bill proposed. In the bill there was no reference whatever to the hotel company, and the prayer of the bill was that the defendants he represented might be restrained from selling gas to the Great Western Railway Company, or to any other person in the plaintiffs district whatsoever.

Lord Justice ROLT: You are relieved by the opening from the supply to the Great Western Company itself.

Mr. DRUCE: And the Metropolitan station, which was the same thing. His friend had stated that the West London Company claimed a right to supply the hotel company entirely, but that was not so. The claim was made to supply the hotel company according to the contract, and to the extent appearing in the contract. They must, therefore, turn to the contract to see how they stood, although he submitted that this was not raised on the pleadings, nor was it raised upon the facts of the case. The contract with Vaughan of the 9th of August, 1858, was that he should erect buildings and works sufficient to supply gas to the Great Western Railway Company at their Paddington station for all purposes, including all their offices, sheds, and other buildings and premises in and about the station, or in the parish of Paddington, and to supply the Great Western Hotel (not the hotel company) for all purposes, and the out-buildings and appurtenances. It had already been stated that the hotel stood on the land of the railway company, who had power under their Act of 1851 to control and regulate that hotel, as well as the rest of their lands. He presumed it would be contended by their counsel that it was most material the hotel, as well as the other parts of the station, should be kept properly lighted; and the question then was, whether it was fairly to be considered a power to be possessed and exercised by that company, when it was found that they had the power under the contract to see that their station was properly lighted in this way. Allusion had been made to the quantity of gas to be supplied from the Wormwood Scrubs works. Their lordships would observe that the 105,000 cubic feet per day was the minimum, and not the maximum quantity, which was a very material point in reference to the obligation which Vaughan had come under, not to supply gas to any other person. The power which the Great Western Railway acquired by the contract was a power which enabled them to obtain a good and cheap supply of gas for all the land within the ambit of their station. The company had power, under their Act of 1851, to build the hotel and to demise it; and, supposing the lease to fall in, and the company could not find another tenant to take it, or the company which now had it were unable to light it, could it be said for a moment that it was not a most important power for the Great Western Company to be in a position at any moment to command a proper supply of good and cheap gas for this hotel? And if a shareholders bill was filed against them in such a case, would it not be a sufficient answer that they were able to supply a necessary article at one-half the price at which they could obtain it from any other source?

Lord Justice ROLT remarked that, in the case just supposed of the hotel being empty and the Great Western Company not being able to find a new tenant for it without the gas being on the premises, the answer would be that there were various companies from whom it could be obtained, and still the supply might be equally under their control.

Mr. DRUCE said he was now upon the powers conferred by the Act of 1851, and was not unmindful of the provisions of the 54th section of the Act of 1860. He ventured to assert that any railway company would be at liberty to do all that was necessary for the proper preservation and maintenance of the land which the Legislature allowed them to buy and to occupy; and therefore if it was found that the Great Western Company had within the powers of their Act of 1851 the right to build and regulate this hotel, it was clear that for the purpose of preventing it becoming a nuisance and a positive obstruction to their own operations, they would have power, the Statute of 1860 apart, to keep it properly lighted in the best way they could. It was not necessary, however, for him to go beyond the Act of 1851. The contract made by his clients was solely to supply the Great Western Railway Company, and it was nothing to them what became of that gas after it left their premises and their control. His learned friends who appeared for the plaintiffs, might contend that the Great Western Railway Company were not at liberty to supply the hotel company. That might be a question between them, but it was quite consistent with his argument that their lordships should hold that his clients were at liberty to supply the Great Western Company with all the gas they bound themselves by the contract of 1858 to supply, leaving it an independent question, what were the rights of that company in respect of dealing with that supply. He claimed to be dismissed from this suit at the instance of the present plaintiffs. He understood from Mr. Bagshawe that it was practically conceded that the words in the 54th section of the Act of 1860, "by any railway company, &c." were a sentence complete in itself, and that the subsequent words did not affect the position of the railway company. But he would call their lordships attention to the fact, that in the 54th section the language was changed when it came to speak of railway companies. The words in the first part were "exercised by or vested in" the authorities there mentioned, but it was "exercised or possessed by any railway company." It appeared to him that a power vested might be a power vested by Act of Parliament, or by the constitution of the authority with regard to whom the words were used; but that a power "exercised or possessed by any railway company" would extend to any matter collateral to and not be confined by that which was inherent in the constitution of the company. And when he found that it was not only with respect to the manufacture but also to the supply, it seemed to him to point not only to the person who might supply the gas to the company, but to the way in which the company might use the supply they were interested in obtaining. Therefore it was within the actual and literal construction of the words to say that a power with regard to the supply of gas, as distinguished from its manufacture, might fairly extend not only to the mode in which the gas was supplied, but the mode in which it was distributed by the company over all the land and the several departments which were connected with their operations. The preamble of the Metropolis Gas Act, 1860, referred to the various gas companies mentioned as being interested in respect of particular districts, and stated that those companies had agreed, as far as possible, each one to confine its supply to a separate district. Then the 3rd section stated that the expression in the Act, gas company or gas companies, "means and includes any and every company and any person or persons supplying gas within the limits of this Act." The Act, therefore, in its very application, embodied the exception or saving clause which was found in the 54th section. It was not as if it struck at "every gas company," and then inserted the 54th section for their protection; but in the original restrictive clause it excepted from its operation such a company as that for which he appeared to the extent mentioned in that clause. He thought, therefore, their lordships would not hold an Act of this kind to strike at the very existence of a company constituted as this. Its existence was coupled with and dependent upon its connexion and contract with the Great Western Railway Company; it only came into existence for the purpose of supplying that company, and it was not only bound to give them a supply, but was precluded from supplying any other persons. The existence of this company and its limited operations was known to the Legislature at the time the Act was passed, and it seemed to him that by the provisions of the 54th section the Legislature not only intended, in the largest and broadest terms, to exempt every power vested in the railway company, but also to exempt this very company by whom they were supplied. He would call attention to the length of time which was allowed by the plaintiffs to elapse before the filing of their bill. The Metropolis Gas Act was passed in 1860, and since that period the West London Junction Gas Company had expended £12,000 upon their works, £5000 of which had been advanced by the Great Western Railway Company.

Lord Justice Lord CAIRNS said, with regard to what the relief was now limited to, the defendants could not plead delay, for, in point of fact, the hotel had not been supplied yet. He observed that the works at Wormwood Scrubs were constructed with some reference to the supply of that hotel, for there was a provision in the contract that the railway company should, within ten days, furnish Vaughan with a ground-plan, &c., showing the course of the gas-main.

Mr. DRUCE said if the plaintiffs, immediately upon the passing of the Metropolis Gas Act, had intimated their view of its provisions to the defendants, as affecting their operations, the outlay he had referred to might have been materially reduced; but, in the face of their knowledge that this outlay was going on, they did not think fit to challenge the defendants right till three years after the Act was passed, and not until after every bit of this outlay had been incurred.

Lord Justice ROLT asked whether the learned counsel thought that circumstance would disentitle the plaintiffs to relief by injunction.

Mr. DRUCE said he did not put it at all higher than this—that, knowing the defendants were making arrangements to supply the hotel with gas, the plaintiffs ought to have said, "We give you fair notice that you are not entitled to do so, and if you take any steps in the matter we will apply at once for an injunction." The defendants then would have enlarged their premises for the supply of the hotel at their peril. The plaintiffs, however, took no step in the matter for three years and a half, and he submitted that this unaccountable conduct eminently disentitled them to an injunction. There was one other point he desired to touch upon. Their lordships would find, by the defendants answer, that from the time the gas entered the mains of the Great Western Company it was entirely under the control of that company, and the defendants, for whom he appeared, had nothing to do with it. The question was—Where was it that the West London Company could be said to supply the railway company? He submitted that this must be at the point at which it passed from the control of the company supplying the gas and entered the mains of the company receiving it. The subsequent distribution, whether made to the hotel company or to the Bishop's Road station of the Metropolitan Company, was a matter altogether within the control and entirely within the volition of the company receiving the gas. Now, if the point at which the West London Company supplied the meter of the Great Western Company was in the plaintiffs district, the observations he had made would not arise. But it did so happen that the point at which the gas left the West London Company's premises, and entered the mains of the Great Western Company, was not in the district assigned by the Act of Parliament to the plaintiffs, and he contended that if any one was entitled to complain it was the company which possessed the right to supply gas at that spot. The affidavit of Mr. Platt, the secretary of the West London Company, stated that the works and premises of the defendants were situated within the district alleged to have been assigned to the Western Gas Company by the Metropolis Gas Act, 1860, and not within the plaintiffs district, and that all gas supplied from those works to the Great Western Railway had been so supplied outside the alleged district of the plaintiffs. It stated also that the defendants had no control over the gas after it left their works.

Lord Justice Lord CAIRNS: Suppose, after the Act of 1860 had passed, a

person had set up a gas manufactory on Wimbledon Common, and produced gas there in very large quantities, which was distributed through a main into the district of the Western Gas Company by some other individual. The Western Company file a bill against both. The man at Wimbledon appears, and contends that what is done in the district is right, and no violation of the Act of Parliament. The man who distributes the gas appears in the same way. If the court thinks they are wrong, is there to be any question that the injunction is not to be against both?

Mr. DRUCE: I do not put it in that way. I say the persons who are at liberty to complain in this case are the Western Company, and not the plaintiffs. You will see that the place where the supply is made is of the greatest possible importance.

Lord Justice Lord CAIRNS: No. No harm is done to the Western Company by what you are said to do. No one is selling gas to a person who would otherwise be a customer of the Western Company, and no complaint has been made of any such sale.

Lord Justice ROLT: The consumption of the gas in the district is the thing complained of, and not its passage through it.

Mr. DRUCE: What I say is, that the person who has a right to complain of a violation of the Act is the person who has the right of supply at the point at which the supply is actually made. If the railway company take their supply of gas outside the district of the plaintiffs, they may distribute it as they please within those limits. I say the moment they take the gas at the point where we deliver it, it is theirs for all purposes, and we have no control over it.

Lord Justice Lord CAIRNS: It is a question of fact on this part. The plaintiffs deny that your control terminates outside your meter.

Mr. T. HUGHES and Mr. DICKENS followed on the same side.

Mr. OSBORNE, for the Great Western Railway Company, said he understood his learned friends to have given up any case except that part which applied to the Great Western Hotel, and merely asked that his clients should be restrained from exercising their power under the agreement of 1858 in regard to the supply of gas to the hotel. The hotel company never had been supplied with gas by them, nor was it alleged that they intended to give it, but only that the West London Company insisted upon their right to give such a supply when required to do so. The defendants answer stated that—"No gas from the works at Wormwood Scrubs has hitherto been supplied to the Great Western Hotel, nor have there been any negotiations with reference thereto save as aforesaid, nor to any other company or person than the Great Western Railway Company and the Metropolitan Company." And, yet the court was asked, while the plaintiffs were still supplying the hotel company themselves—there being no arrangement or stipulation, and no suggestion of any promise whatever by the Great Western Company to take that supply into their own hands—to "restrain the Great Western Company from continuing to use or receive, within the district or limits, any gas supplied for sale by the West London Junction Company, or otherwise than by the plaintiffs, and from reselling or supplying for sale to any other company or person within the plaintiffs said district or limits any gas whatever, or from infringing or violating the plaintiffs rights in any way whatever." He ventured to think that this was the first case in which the court was called upon to restrain a company from doing what they were not doing or intending to do, and which they could not do, if so disposed, without giving ample notice to the plaintiffs, who had a contract for the supply of gas to the hotel. But he submitted that the Great Western Company had a clear right, under the contract of 1858, to supply the hotel company with gas.

Lord Justice Lord CAIRNS: Is there anything to prevent this being done—the hotel company and the Great Western Railway Company going together to this Wormwood Scrubs Company hand in hand, and saying—"We both want gas; we will take the delivery at Wormwood Scrubs, and will arrange between ourselves as to the carriage, and will then divide it as we think fit for our own consumption"?

Mr. OSBORNE: I contend that the agreement enables us to do it.

Lord Justice Lord CAIRNS: Would there be anything illegal in doing that?

Mr. OSBORNE said there was nothing against it in the Act of Parliament. He contended that the hotel must be taken as part of the railway of which the defendants, whom he represented were the owners, and that under the provisions of the Act by which its construction was authorized, it must always remain a part of their undertaking. They entered into the agreement with Vaughan for the construction of these works for their own supply, and though they consented to the assignment of Vaughan's interest to Vavasœur, they put a prohibition upon Vavasœur assigning to any other person. They were no parties to any subsequent assignment, and could only regard the West London Junction Company as the agents of Vavasœur. He submitted that there was no objection to the validity of the agreement which enabled them to take a supply of gas from the person with whom they contracted. But then it was said they were within the prohibition of the Act of 1860. The enacting part of that Statute went far beyond the preamble, and it was perfectly clear that some limitation must be put upon the generality of the 6th clause. That limitation was found in the 54th clause, within which he submitted the Great Western Company came.

Lord Justice Lord CAIRNS: The first question is whether you are not within the 6th clause, "supplying gas for sale."

Mr. OSBORNE said they had not yet supplied a single foot of gas to the hotel, and therefore they could not be said to be within the provisions of that clause. Looking, also, at the 54th clause, it could not be said that at the time of the passing of the Act the Great Western Company did not "exercise or possess powers with respect to the manufacture or supply of gas within the metropolis," seeing that under the contract of 1858 they could compel Vaughan to perform the contract into which he had entered, or could take possession of the works and supply themselves. The company did not come within the latter part of the clause, which prohibited the "making or supplying gas to the public as a trade or business," and it was not even suggested that they made a profit by it.

Mr. STEVENS followed on the same side, and contended that in what the defendants were alleged to be about to do there was no "supply of gas for sale" within the meaning of the 6th section of the Metropolis Gas Act. It would be a supply for consumption, and not for sale, and the defendants were not within either the letter or the spirit of the prohibition. There was nothing in the Act which would prevent a person, if he chose, from motives of pure benevolence, erecting works, and supplying a poor district in the metropolis gratuitously.

Lord Justice ROLT: It is not here a question of giving, but of selling gas for consumption. Is that supplying it for sale?

Mr. STEVENS said if the Great Western Company chose to say to the hotel company, "We will not sell you gas, but we will give it you for your benefit, that would not be a supply of gas by way of sale." The sale contemplated by the Act was a sale to the public by way of trade or business, and for the sake of making a profit out of the transaction. The Great Western Railway Company could maintain an action at law against Vaughan or Vavasœur for specific performance of the contract entered into. Their right was not taken away by the Act of 1860, and it would be no answer to their complaint to plead the provisions of the 6th clause of that Act. If the contention of the plaintiffs was correct, it was clear that the right which the company possessed under the contract of 1858 to receive a supply of gas from the Wormwood Scrubs works would be avoided, prejudiced, or impaired, which the 54th section of the Act of 1860 said was not to be done. It was said that their lordships must interpret the words "legally exercised and possessed." Was it for the plaintiffs to raise that question for the first time at the bar on a bill framed as this was? Their lordships were asked to determine a question which could only be raised by the Attorney-General upon an information for the benefit of the public, or as raised by a shareholder against the company. The Great Western Company were substantially, if not literally, making gas for their own use, and not making it for the purpose of sale to the public as a trade or business for the purpose of making a profit.

Mr. BACON having been heard at some length in reply, the court then delivered the following judgment:—

Lord Justice Lord CAIRNS: This bill is filed by the Imperial Gaslight Company, and the prayer of it is directed to a greater number of matters than those we are now to dispose of. The bill prays that the Great Western Railway Company may be restrained from using at their Paddington station the gas manufactured and supplied from Wormwood Scrubs, and also that they may be restrained from using that gas for the purposes of the Metropolitan Railway, which, under some agreement, they are in part working. Those matters of relief are abandoned at the bar, and therefore it is not necessary to express any opinion with regard to them. The only remaining question is as to the supply of gas to an hotel company, whose hotel is immediately contiguous to the station of the Great Western Railway Company. The Great Western Hotel Company is not a party to this bill. Now, addressing myself to that question—the only question we have to dispose of—it is necessary to look at it, in the first place, as regards the defendants, the West London Junction Gas Company, Limited, the owners of what I may term the Wormwood Scrubs Gas-Works. The only point which the Imperial Gas Company have against that company as the suppliers of gas, is under the Metropolis Gas Act, 1860. The Imperial Company, under that Act of Parliament, are what I may call the proprietors of the particular district of the metropolis in which the Paddington terminus is situated. The 6th clause of that Act of Parliament enacts, after pointing out the divisions of the metropolis into districts, and assigning to the Imperial Company and the other companies their several districts, that "no other company or person than the company to whom such limits are for the time being assigned, or shall hereafter be assigned, shall supply gas for sale within the said limits unless authorized by Parliament so to do." As regards the West London Company, therefore, the simple question to be tried on this bill is the dry, narrow question of law, aye or no—have they supplied gas for sale, or do they threaten to supply gas for sale, within the limits of the Imperial Gas Company? The hotel to which I have referred has never yet been supplied with gas from the Wormwood Scrubs works. It is therefore, even as to the Wormwood Scrubs Company, not a question of any act done, but of an intention to do an act. The Wormwood Scrubs Company, in their answer, say very fairly what their intention is. They say they have contracted with the Great Western Company to put up works which shall afford a supply of gas, of not less than a certain number of cubic feet per night, for the purposes of the station of the Great Western Company and of the hotel, of which the Great Western Company are the lessors; and that they, the Wormwood Scrubs Company, intend to supply that gas according to their contract if and when required so to do. But then they further say that, even if they had supplied gas under the contract for the use of the hotel, they would not be supplying it for sale within the limits of the Imperial Gas Company. That seems to be the narrow and short question as regards the West London Junction Gas Company. Now, the facts as they relate to that seem to be these: The West London Junction Gas Company say, in their answer, that all gas supplied from their works was supplied to the Great Western Company by their manager for the time being from their works at Wormwood Scrubs; and all payments for gas so supplied have been made to their manager by the Great Western Company; that the mains and pipes along the line of the Great Western Company's railway, by which the gas is conveyed, have been under the control of the officers of the last-named company, and the supply of gas to the said premises has been regulated, and from time to time cut off and laid on to another part of the railway, by their officers and workmen, and not by the managers or servants in the employ of their company. There is an affidavit also to the same effect, and the only answer to that on the other side is an affidavit filed on behalf of the plaintiffs in reply, stating the belief of the deponent that the mains from Wormwood Scrubs to Paddington station belong to the West London Company, and referring to a statement made by an agent of the West London Company in the controversy before a committee of the House of Commons, which, on being referred to, appears to amount to this—a statement by the agent that the mains had been paid for by the West London Company, but that in the gas supply to the Paddington station the risk of leakage from the meter at Wormwood Scrubs was the risk of the Great Western Railway Company. There is no controversy that the two meters—both the meter of the Wormwood Scrubs Company, by which they check the delivery of their gas, and the meter of the Great Western Company, by which, for their own satisfaction, they check the receipt of the gas—are both out of the district of the Imperial Gas Company, and close to the Wormwood Scrubs works. In my opinion, therefore, this is a question which does not admit of any serious doubt, because, although gas is a very intangible article to our apprehension, still gas is a manufactured article which is sold and delivered like any other manufactured article, and the question is to determine when and at what part this manufactured article is sold and delivered. Certainly, as I understand it, with regard to gas, wherever the point is that the meter of the company is fixed, and the gas leaves the meter and is delivered to the consumer, that is the point where the risk of the company ends and the risk of the consumer begins. In a dwelling-house the pipe on both sides of the meter may or may not belong to the company, but where the meter is which tells what gas has passed through and been delivered on the premises, that is the place where the risk of the company ends and the risk of the consumer begins; and so I say, in my opinion, the gas company in this case delivering gas through these two meters, which are altogether out of the district of the Imperial Company, the gas is there sold and delivered to the Great Western Railway Company, and if there be, which I do not say there is at all, a supply for sale within the meaning of the Act of Parliament, that supply for sale is not, in my opinion, within the limits of the Imperial Company, but in a wholly different district. Therefore, as regards the West London Company, supposing they were to do what they say they are bound by contract to do, and intend to do when called upon, they would, in my opinion, at the very most be supplying gas for sale within limits which are not the limits of the Imperial Gas Company. The case, therefore, as regards them, entirely fails. Leaving them out of the case, we

turn to the Great Western Railway Company. What is the case as regards them? They have not as yet, certainly, supplied any one but themselves with gas, either for sale or otherwise. Upon that there is no dispute. It is said, however, that they intend to supply the hotel company, their tenants, with gas, and that, if they do so, it will be supplying the hotel company with gas for sale within the plaintiffs limits. Now, the facts about that seem to stand in this way:—The hotel company, who are not defendants to the bill, have evinced an intention and desire to get if they can their gas from Wormwood Scrubs. The Great Western Railway Company have by contract, long antecedent to the passing of the Act of 1860, entered into an engagement which entitles them, as between themselves and the Wormwood Scrubs manufactory, to receive from the latter a supply of gas sufficient not only for their station at Paddington but also for the hotel. The building of the hotel was a thing *intra vires* of the Great Western Railway Company, because they were authorized by their Act to do it. They are the landlords of it, and they were at liberty to demise it upon any terms they thought proper. The hotel is built upon land which they were authorized to take as a part of their station. Virtually the hotel is incorporated as part of their undertaking, and, by the Act, the hotel is to be under the control and management of the Great Western Railway Company. Now, as regards what the Great Western Railway Company intend or pretend they have a right to do, that stands in this way upon the answer, as to which there is no contradiction:—The Great Western Railway Company submit, as a matter of law, that they are entitled under the circumstances I have mentioned to supply their hotel with gas upon any terms they think fit. They submit that as a matter of law, and they do so upon the provision of the 54th section of the Metropolis Gas Act, which provides that—"Nothing in this Act contained shall avoid, prejudice, or impair any of the powers now exercised by or vested in the Metropolitan Board of Works, or in the Commissioners of Sewers of the City of London and the liberties thereof, or any powers now vested in any local authority within the metropolis, or any powers now exercised or possessed in respect of the manufacture or supply of gas within the metropolis by any railway company, or by any other person or persons making or supplying gas for his or their own use, and not making or supplying gas to the public as a trade or business." The Great Western Railway Company say that—"At the time the Act passed, we possessed by this contract, and by the authority of Parliament which gave us the power to build the hotel and to demise it, the power to supply this hotel with gas; and we submit that we are entitled, if so minded, to furnish such supply on any conditions we think fit;" but they say also that, putting aside what they intend to do, supposing their view of the law is correct—"No gas from the works at Wormwood Scrubs has hitherto been supplied to the hotel company, nor have there been as yet any negotiations or arrangements in reference thereto save as aforesaid;" which seems to me only to apply to the desire evinced by the hotel company to get such a supply of gas. Now, under that state of things, is it possible to say that the Imperial Gas Company can file a bill which, if it is to be maintained where no act has been done, can only be maintained upon the clearest evidence of a threat or intention to do the act. It seems to me to be utterly impossible for a court of law, before it knows in what way the act is going to be done, to be able to judge whether the supply of this hotel company would or would not be a violation of the Act of Parliament. I desire to express no opinion upon it. It appears to me utterly impossible to express an opinion upon the subject till the court is in possession of all the circumstances in which the supply takes place. One might easily conceive, if the case was put, that an arrangement might be made by which the hotel company could get a supply of gas, by consent of the Great Western Railway Company, from Wormwood Scrubs, by a separate pipe brought along the line of railway in such a manner that, if there was a supply for sale at Wormwood Scrubs, it would be a supply for sale not within the limits of the Imperial Company at all. But, without speculating upon what might be done, it is impossible for the court to judge whether or not the supply would be an infringement of the Act of Parliament until it is shown that it is going to done, and in what manner it is going to be done. As the matter now stands, although the Great Western Company, being called upon to express their view of their rights, do express them, they add to it a statement, that as yet no negotiations whatever have taken place for a supply of gas to the hotel company. There is, therefore, no threat and no intention on the part of the railway company to supply the hotel company. Under these circumstances, it appears to me that the bill on this point entirely failed, and was without justification against the Great Western Railway Company. I think it is obvious, from the manner in which it came to be filed. The bill was filed against the Great Western Railway Company, and a correspondence took place with regard to those matters in which no relief is now asked. The Great Western Railway Company were not asked before the bill was filed whether they were going to supply the hotel company with gas, nor upon what terms. Supposing they had been asked, and had answered in the way they answer in the suit—viz., that they claim the right to supply the hotel if and when they please to do so, but that at present no supply has been given, and no negotiations or arrangements for a supply has been made—I apprehend the plaintiffs would not have filed a bill against the company. I think, therefore, the bill as against both defendants was rightly dismissed by the Vice-Chancellor, with costs.

Lord Justice ROLT: The case originally made by the bill of the Imperial Gas Company against the West London Junction Gas Company and the Great Western Railway Company complained more or less directly of three acts—three distinct acts of the defendants—first, the supply by the West London Company to the Great Western Railway of gas for the use of their Paddington station, or some parts thereof; secondly, of the supply of gas to the same company for the use of the station of the Metropolitan Railway Company; and thirdly, though not very distinctly, of some intention thereafter to supply gas also to the Great Western Hotel. The prayer of the bill was directed generally for an injunction against the West London Company for supplying, and against the Great Western Company for receiving, gas for the purpose of sale, following the words of the Act of Parliament which they alleged to be infringed. Now, the two first of those complaints have been, in the argument before us, entirely abandoned, and the case then comes entirely to one of threatened wrong—a wrong which is alleged to be contemplated by the Great Western Railway Company against the plaintiffs. Of course, the only remedy can be by injunction. There is no account wanted, for no wrong has yet been done; it is merely a question of granting an injunction against an intended injury. Now, no doubt it is important that the jurisdiction of the court to restrain actions for threatened wrong should be maintained. It is a jurisdiction of a very valuable kind. At the same time, it must be very carefully exercised. Of course, in cases where the wrong threatened is irretrievable, as in cutting timber, it appears more important than in cases like the present that the wrong threatened shall not be done. But if it be at all problematic whether the thing complained of will be done in a manner which will violate the rights of the plaintiffs, then of a surety the jurisdiction ought not to be exercised. There is a case which came from Lord Langdale to Lord Cottenham—*Hills v. Taylor*—which illustrates, though in a very different case to the present, the course which the court ought to adopt. It was a bill to restrain a threatened nuisance—viz., the manufacture of gas—I think somewhere in this neighbourhood, and Lord Langdale was of opinion that the manufacture of gas was in itself a nuisance, though no doubt the defendants said they had an improved method, which they declined to disclose, of manufacturing gas which would not be a nuisance. But on appeal, Lord Cottenham said the question could not be decided till the works were constructed, in order to see whether the thing intended to be done could be done in a manner which would not constitute a nuisance; the application was therefore premature, and the injunction could not be granted. Applying those principles to the present case, what is it that is here threatened to be done? The West London Company, in their answer, really say no more than this—"We do intend to supply the said hotel with gas if and when required by them so to do, as we submit we are bound by the said contract to do if required." It is probable, I think, that answer means "when required by the Great Western Company so to do," though without the context it would be, "when required by the Great Western Hotel to do it, and to do it by the contract." The Great Western Company's answer is simply that the works and mains of the West London Company being insufficient, they made a temporary arrangement, till the works could be enlarged to supply the Great Western Hotel Company, as well as the railway company, according to the agreement of August, 1858, and it is intended that the said works and mains shall be enlarged accordingly. Then they go on to say that no negotiations have taken place, and no negotiations are pending between them and the hotel company for a supply of gas. No doubt this indicates an intention on the part of the West London Company to supply gas to the Great Western Company for the purposes mentioned in the agreement of 1858. But may not the substance of that agreement be performed clearly without any violation of the law? I think it may. It is quite possible that the mode of proceeding which may be adopted by the two companies—the hotel company and the railway company—would be this, that by an arrangement between themselves as to the terms upon which the gas should be supplied, the Great Western Company would apply to the West London Company for a supply of gas—say to them, "Deliver us the gas at Wormwood Scrubs, and we will convey it to the place in which we propose to use it." That place no doubt is within the district of the Imperial Company, but it is gas manufactured at Wormwood Scrubs. The defendants receive it there, and lay it on to their own premises; but though those premises are within the district of the plaintiffs company, I cannot think there is anything in the law to prevent them doing so. At all events that is a nice and doubtful question, and there may be other means to which they can resort for the supply of gas which will substantially perform the contract. I think it would be impossible, in anticipation of a threatened act of this kind, which may be performed in one way or another, and which was a subordinate part of the plaintiffs case—I say I think it would be impossible for the court to say that it is a case in which they ought to interfere by injunction. Mr. Bacon said, in answer to a question, that so applying for gas to the West London Company by the railway and hotel companies for the delivery of the gas at Wormwood Scrubs would be a violation of the law; he said, independent of the Act of Parliament, without stating what provision of the law he would rely upon for that purpose, but he relied specially on the 6th section of the Act of 1860. It is impossible to find in that Act any such restriction. It is only necessary to refer to the 6th section, because that is the clause in favour of the plaintiffs company and of the other companies within the metropolitan district—"No other company or person than the company to whom such limits are for the time being assigned, or shall hereafter be assigned, shall supply gas for sale within the said limits;" not "shall supply gas for use within the said limits," but "shall supply gas for sale." It may possibly be read "by way of sale." If they are selling their gas at Wormwood Scrubs, I cannot think, in construing this Act, which must be construed strictly, that can be considered a violation of this provision. It is not, as I said, absolutely necessary to decide this question now, but that is my present opinion upon the subject. Certainly, in a subordinate part of a case like this, and in relation to an act which is merely threatened, and may never be brought into operation, it is not possible to treat this as a threatened wrong, which requires and justifies the exercise of the jurisdiction of the court. This applies to the relief asked against the West London and Great Western Companies, and renders it quite unnecessary to consider the important and somewhat nice points which have been argued as to the construction of the Act of 1860, or the other points which have been argued as to the powers of the Great Western Railway Company under their Act of 1851, which empowered them to construct and demise the Great Western Hotel, or as to their powers under that Act of selling gas to the hotel. It is not necessary for me to express any opinion on those points at all, on the ground that this is only a threatened wrong—that no act has been done, and no injunction is needed. It is by no means clear that wrong will ever be done. I think it obvious that this bill cannot be sustained, and that the Vice-Chancellor was right in dismissing it with costs. Of course, the appeal also will be dismissed, with costs.

Miscellaneous News.

CAMBRIDGE IMPROVEMENT BOARD.

A Special Meeting of this Board was held on Tuesday, the 17th ult., in the Council Chamber, Guildhall, to consider the report of the Gas Contract Committee in reference to the lighting of the public lamps. This question, owing to the high charge of the existing gas company, has excited considerable public interest, and the fact that a tender had been sent in to light the lamps from a new company caused a very full attendance of the board. Alderman BEALES presided.

The proceedings commenced by the reading of the following letters and the decision the Gas Contract Committee had come to upon them:—

Hull, Dec. 13, 1867.

Dear Sir,—As a committee has been formed in Cambridge for the purpose of sending in a tender for the public lighting, we do not think it advisable to tender, as no doubt you will receive one from the said committee.

In case you do not receive a satisfactory tender, we shall be glad to give you one at a future time. The time allowed, up to the 1st of June, is hardly sufficient to complete new works.—We are, &c., STEARS BROTHERS AND CO.

Fred. Barlow, Esq., Cambridge.

The following are the tenders which the committee have received. The first was from the chairman of the old gas company:—

To the Improvement Commissioners.

Gentlemen,—The directors of the Cambridge University and Town Gaslight Company beg leave to tender for carrying out the terms of the draft contract referred to in the advertisement of the Improvement Commissioners of the 19th of November, 1867, with the following modification—viz., That under clause 5 lamps shall not be required at greater distance than 75 yards, according to the company's Act, clause

50, and with this proviso the company offer to fulfil the contract on the following terms—viz., That the commissioners shall pay to the company so much money as may be due to them after the rates following—namely, £3 for every burner lighted from the 1st of September to the 31st of May, both inclusive, yearly, in equal portions on every Christmas-day and Midsummer-day, or within 30 days thereafter respectively; and 15s. 8d. for every burner lighted from the 1st of June to the 31st of August, both inclusive, yearly, such last-mentioned sum to be paid within 30 days after the 31st of August in each year.

The company, in making this tender, do so without prejudice to their cause or interest, and without admitting that the commissioners have at the present time the legal power of licensing any other company to supply gas to the town of Cambridge, unless such other company have first obtained the sanction of Parliament.—Signed, on the part of the directors, R. PHELPS, Chairman.

The following was the tender from the new company:—

Cambridge, Dec. 13, 1867.

Gentlemen,—I beg to inform you that the Cambridge Consumers Gas Company, Limited, are willing to supply the public lights with gas for 14 years, in accordance with the terms of the amended draft contract, at £2 14s. 6d. for the winter lamps, and 13s. for the summer lamps; or as the company would beg to suggest as a method more simple and likely to work satisfactorily, they are willing to supply the gas, per meter, at 3s. per 1000 feet.—I am, &c.,

JAMES HOVELL TURNER, Secretary.

The committee beg to recommend to the board that the tender from the Cambridge Consumers Gas Company, Limited, be accepted.

The CHAIRMAN moved the adoption of the report.

Mr. ALLEN: Who sends in the tender on behalf of the new company?

The CLERK: Mr. Turner at the post-office.

Mr. WATERS: I will second the adoption of the report.

Dr. PHELPS, chairman of the present gas company, thought it was only fair and right that the whole body of the commissioners should really know what had taken place; that in their name an advertisement had been inserted in the newspapers to the effect that they (the commissioners) could give power to any company tendering to open the streets for laying down mains, &c. Upon the strength of that supposed power they had invited tenders to be sent in for lighting public lamps in the town of Cambridge. A tender had been sent in by some persons proposing to form a company——

Alderman APTHORPE (interrupting): The company has been formed.

The CHAIRMAN: I hope you will not interrupt the speaker; you can reply to anything that is said afterwards.

Dr. PHELPS (continuing): Well, these persons sent in a tender to light the public lamps on the following terms:—At the rate of £2 14s. 6d. per lamp for winter lighting, and 13s. for each summer lamp, or by meter at 3s. per 1000 feet. Now, he could say with certainty that no company whatever could do that at a remunerative price, and, therefore, this offer was a bribe to the commissioners. The new company, in effect, said: "We will have no profit ourselves, but if you will give us the opportunity we will ruin the old company, and give you the gas for nothing if you will accept our tender." Now, he could assure the commissioners that he and his co-directors of the existing gas company, along with highly competent professional men, went into the question of lighting the town of Cambridge with gas, and examined it as thoroughly as could be done. They must understand that in tendering to light public lamps there were three important items to be considered. First, there were 660 lamps, posts, and apparatus to be provided; there was then to be included in the full tender interest on that capital so invested, and the expense of repairing, and keeping the lamps clean, plainted, and glazed. That was one item in making up the amount which had been tendered. The second item was the wages of lamplighters; and the third, the cost of gas. Now, he could assure the commissioners that his company, in making up their tender, had charged *nil* for the first item; in the second, only the actual wages paid to the lamplighters; and in the third, they had charged at the rate of 3s. per 1000 feet of gas. He would prove to any competent person that under this estimate the charges for the winter lamps were only £2 19s. 11½d., and 15s. 8½d. for the summer, and the company in their tender, to make even figures, had offered to light the town during the winter at the rate of £3 per lamp, and 15s. 8d. per lamp in the summer. The Cambridge Gas Company was quite willing to submit that tender to the arbitration of any competent gas engineer, and if that gentleman stated that it could be done for less, with any profit at all, the gas company would undertake to do it. He spoke at that meeting as a commissioner, and as such he felt it to be his duty to advocate the town getting its gas as cheaply as possible. That was only a fair and reasonable principle; but, at the same time, could he be expected, holding to that principle, to recommend to the commissioners, both from the town and university, the objectionable principle that, if the new company would sell them gas at no profit, they ought to let them come in and take the place of the old company? Certainly not. That was a principle that ought not to be adopted by any means. Upon what grounds, then, were the commissioners taking this extraordinary step? What fault had they to find with the existing company? Under the old Act the price was 6s. 6d. per 1000 feet of gas to the private consumer, and £3 4s. per lamp in the winter, and 16s. for each summer lamp.

Alderman APTHORPE (interrupting): Have we any right to hear this? We never have discussions of this sort when other tenders are sent in.

The CHAIRMAN hoped Alderman Apthorpe would allow Dr. Phelps to finish his remarks. He would have the opportunity of replying.

Dr. PHELPS (continuing): He would again repeat that the company were willing to let this question be settled by any competent engineer. He considered the present company's tender was an exceedingly reasonable one. It was 3s. for every 1000 feet of gas pure and simple, the lamplighters wages only being charged exactly as they were paid. He supposed the new company would try to screw a little of their profit out of the poor lamplighters wages. The present company paid their lamplighters well.

A VOICE: You have no right to prejudge the new company.

The CHAIRMAN: I will suggest to Dr. Phelps that he should not impute things to the new company which he ought not to do.

Dr. PHELPS: I simply said what I thought must be the result of cheap prices.

The CHAIRMAN: Well, you must confess it was rather an unfair observation to make.

Dr. PHELPS (continuing) said the commissioners had invited a new company to come to Cambridge to break up the streets, lay down double mains, &c., &c., with the idea of providing gas for the public lamps, whereas they must all be aware that the new company could only make it pay by ultimately endeavouring to supply private consumers also. Now, he did not wish the commissioners to think that the present gas company would allow this matter to go on without competition. He should like to direct their attention to what had occurred at Perth. The price there was 5s. 6d. per 1000. A new company was started, and brought down the price to 4s. 6d. Both companies were unable to pay at that price, and they amalgamated, and now the public had to pay 6s. 8d. per 1000. Owing to this increased charge Sir John Pakington would not allow the barracks at Perth to use so much gas as they did before. He saw no reason to find fault with the Cambridge Gas Company for the charges they had made, which were much lower than in many other towns. In London the charges ranged from £4 4s. to £6 15s. per lamp; the Chartered Gas Company charged £4 4s. and £5 1s. The Cambridge Company allowed 4½ cubic feet of gas per hour to each lamp, while in London the company he had named only allowed 4 cubic feet. The Chartered Gas Company only allowed 4 cubic feet, and charged £4 3s. 6d.; the Imperial Gas Company charged 3s. 4d. per 1000 feet; the Birkenhead Company 5s. 6d. and 5s.; the Congleton 4s. 6d.; the Macclesfield 4s. to 3s. 3d.; the Sowerby Bridge, 4s. 2d. Compared with these, the Cambridge Company offered to supply the lamps at £3 in the winter, and 15s. 8d. in the summer. Could it be expected that any lower tender would be sent in? What had the Cambridge gas done to merit this treatment? Why should they be put into competition with another company when their tender was so low? There was only one thing that any person in the town could be dissatisfied with, and that was the company paid back dividends. Now, look at the profits. Under the old Act, the company paid capital out of revenue, and so paid less than 10 per cent. Under the present Act the old shareholders got 10 per cent., and the new 7 per cent. The maximum dividend of the company was now only 9 per cent. In a risky business like gas making that was not an unreasonable profit. As to back dividends, personally he had always been against them, and had advised the directors never to pay back dividends. On the new capital raised under the new Act no back dividends could be paid, and he did not believe the back dividends on the old capital would be paid. Under the new Act the company were now making gas of 14 candles, or at the works 16; under the old Act the company only supplied 12-candle gas, and the cost price was now 1s. more than under the old Act. 14-candle gas in the town implied 16 or 17 at the works, and every additional candle per 1000 feet cost 3d. Therefore the argument which had been used against the company, that the new contract ought to be founded upon the old one, completely fell to the ground; and he maintained that the present gas company were justified in making the charges they had.

Mr. J. EADEN said he should like to ask one question. He was not present at the committee, and never heard the present gas company's tender read. But he believed it started with a proviso, and made their tender conditional on that proviso being observed. There was no limitation of that sort in the specifications put forward by the commissioners, and, in point of law, he believed the tender was illegal, and could not be received. The practical effect of this proviso would be that many of the lamps in the suburbs, being more than 75 yards apart, the company, under that tender, could compel the commissioners to move the lamps within the prescribed distance. That tender was opposed to the terms of the specifications put forward by the commissioners, and was therefore no tender at all. It could not, in his opinion, be carried out by the board, because it did not comply with the terms of the specifications. He did not wish, however, to shut out discussion.

Dr. PHELPS (interrupting): We never dreamt of making the commissioners alter the lamps.

Mr. EADEN: Under your tender, however, you would have the power of making us move the lamps. That clause in your tender is a qualification which does not exist in the specifications. Unless the company's contract is in accordance with the tender, we should not know how to act.

A COMMISSIONER said it could be clearly shown that the terms of the present gas company's tender gave that company the power of altering the position of the lamps.

Mr. EADEN said his point was this. The specifications did not require that these lamps should be altered. The gas company's tender did, and therefore the board could not adopt their tender. If the board adopted the old company's tender, they would have to move all the lamps within the 75 yards. This would render an increased number of lamps necessary to light the town.

Dr. PHELPS: I say, on the part of the gas company, there would be no difficulty whatever with regard to this matter.

Mr. EADEN said, speaking as an Improvement Commissioner, he thought it his duty to point out the difficulty which the board would fall into by adopting the old company's contract. The new company was formed and registered; therefore there was no difficulty in dealing with it. With regard to the argument used by Dr. Phelps against the new company as to its not paying, the board had nothing to do with it. If the two companies sent in tenders, the commissioners had only to see that the companies had stability, and that the promoters were able to carry out the terms of their contract. Their duty as Improvement Commissioners and trustees of the borough funds was to take the lowest tender, provided they could rely upon it being properly carried out. He hardly knew how to address Dr. Phelps, as he did not know in what character he appeared that day, whether as chairman of the gas company, the Master of Sidney College, or as an Improvement Commissioner. If he wanted to consult any one upon theology, he would go to the Master of Sidney; but if he wanted business knowledge as to profits and loss, he would go to Mr. Sayle. He would defer to the opinion of the former in theological matters, and to the latter on commercial topics. The chairman of the present gas company had informed them that they were making no profits more than they ought, and that now he would give up the back dividends as a bad job. These back dividends would never have been given up if the new company had not been formed. At the meeting of the Improvement Board on the subject, Mr. Balls, with ostentatious plainness of speech, said that the shareholders meant to have their back dividends, and at a succeeding meeting of the gas company, the chairman (Dr. Phelps) complimented Mr. Balls on having been so plain. Mr. Peed was still plainer. He said the shareholders were determined to have the back dividends, so long as the present gas company enjoyed a monopoly. Now he could understand why the present company had changed their ideas; but the real question for the board was, whether the commissioners ought to listen to dictation from the old company. The board must either bind itself hand and foot to the old company for 14 years, or accept the terms of the new company, which were much more favourable to the interests of the town. By accepting the old company's contract, they could not start a new company for the time the contract lasted. It was clear that nobody but the commissioners could allow the new company to open the streets. The old company possessing the field had offered to light the lamps at £3 per lamp in the winter, and 15s. 8d. in the summer; and the new company, with a respectable directory, offered to do the same thing at £2 14s. 6d. for each winter lamp, and 13s. for each summer lamp. Thus there would, by adopting the new company's contract, be a saving to the town of £264 a year, or of £4096 in 14 years. The town having saved that money, could afford to buy its own organ, without accepting Mr. Michaelson's offer. Now, what were the arguments against the new company? The board had nothing to do with the reckless expenditure of the company. The only argument against the company was the inconvenience of opening the streets. The question was a balance of convenience and inconvenience, broken streets and cheap gas. He admitted that it was inconvenient to have

the streets broken up for new mains, but the question was, whether the town would put up with a temporary inconvenience to secure cheap gas. He thought the town would. He need not go into the legal part of the argument. He knew the old company had taken counsel's opinions, but they did not read them to the board. He did not think those opinions could have been very strong, or they would have been read. What really was the law upon the point with regard to opening of streets? The Improvement Board by their Act had the power of lighting the town. Gas was not known when that power was given, but still, having the power to light, he took it that it gave them incidentally the power necessary for lighting even when gas was introduced. The opening of streets raised two questions. First, the right of soil belonged to the corporation, who, if the streets were illegally opened, was the only party which could bring an action against the commissioners; therefore, it was clear that unless the corporation interfered—and it was not likely they would where a great public benefit was involved—the commissioners had nothing to fear in opening the streets. The second question was respecting the surface rights as to paving. Now, what powers had the Paving Commissioners under the Acts? The Acts gave them the power, not of putting up posts, but to light the town (as per sections 58 and 59), and the commissioners, he contended by that, obtained incidentally power for lighting. A lamp-post in a highway for an oil lamp was, in point of law, as much an obstruction as a gas trench. The principle was the same. It was only a question of degree. He did not entertain any question as to the power of the commissioners to open the streets or to obstruct the highway to the extent that was necessary to light the town, and he had great pleasure in supporting the committee's report.

Mr. DEATH asked to be furnished with the names of the directors of the new company.

The CHAIRMAN read them as follows:—Mr. Sayle, Mr. Edmond Foster, Mr. Rance, Mr. H. Eaden, Mr. Turner, and Mr. Carter, surgeon.

Mr. BALLS said he should not take up the time of the board by replying to the remarks of Mr. Eaden, which were of a legal character. He thought Mr. Eaden had been fishing for the gas company's legal opinion. The only answer he could make to that was, the company would defend its rights. When the shareholders purchased their property, they did so with the understanding that they had a right to their back dividends. When the company was first formed they received no dividends, although entitled to 10 per cent.; and it was proved before the committee in the House of Commons that there was a surplus due to them as soon as they could earn it. As a director of the gas company, he had always endeavoured to do his duty to the shareholders, and he contended they were thoroughly justified in having the back dividends. Last year, when before the committee of the House of Commons, the Legislature tacitly admitted that they were entitled to back dividends by not attempting to interfere with them. (No, no.) Well, he had a right to assume that such was the case; but he was that morning arguing as to the right, and not as to the policy, of pressing for back dividends. As to the clause about 75 yards, the company did not introduce it into the tender to take any advantage of the commissioners. He protested against such interpretation being put upon it. They did it simply to protect their own interests. If the company were not protected by this clause, the commissioners could, by having the lamps removed to a great extent beyond the prescribed distance, entail a frightful loss upon the company. The clauses which the company introduced into their Act were narrowly looked after by their opponents in Parliament, and if this one was so unreasonable they might be sure objection would then have been taken to it, and it would have been struck out. On the contrary, however, the committee of the House of Commons thought that the company ought to be protected by that clause. The commissioners had two tenders for lighting before them, and it had been argued by the preceding speaker that it was right that the commissioners, as representing the town, should accept the lowest tender. Now, in reply to that, he would remind the board that the eminent gas engineer, Mr. Barlow, had said that it would be to the advantage of the town to have a good quality of gas—a gas that was pure and of good illuminating power—rather than poor and cheap gas. That gentleman had also said that he did not think 4s. an unreasonable price per 1000 feet for such quality of gas. In years gone by the company charged as high as 10s. per 1000 feet; and, although they had always been abused, they had, with no pressure from without, reduced the price from time to time, until it was now down to 4s. He found at Yarmouth the price of gas was considerably higher. Although the maximum price of gas in Cambridge was 4s., there was no reason why the price of gas should not be lowered from time to time, if the company found that they could do it. Of course, if the commissioners had come there that morning with their minds made up to accept the lowest tender—although they had a guarantee in the past that the old company were willing to reduce the price as circumstances permitted—it was but of little use his attempting to argue on behalf of the old company, whose tender was not the lowest; therefore he did not expect to be able to influence the board. Mr. Balls concluded his remarks by hoping that those gentlemen present who were interested in the new company would not be allowed to vote, as by the new Act those commissioners interested in the old gas company were allowed to be present while gas matters were discussed, which they were not under the old Act, but they were not allowed to vote. Therefore it would not be fair to the shareholders of the old company to exclude them, and allow the others to vote. He thought the town ought to hesitate before it hastily adopted the new company, otherwise they might have to suffer for taking a leap in the dark.

Mr. NUTTER asked if the new company would undertake to supply gas of 14-candle power.

The CLERK said they were bound to do so, according to the terms of the specifications.

Dr. WARAKER thought it would be desirable if they could come to some arrangement in this matter. He was not in the room when the tenders were read, but he understood that in one of the tenders there was an offer to burn by meter. If the board could make any modification with regard to these tenders, and was not bound strictly by them, as they at present existed, he felt disposed to move an amendment upon the report that the matter be referred back to the committee, to see if some arrangement could not be arrived at to burn by meter instead of at so much per lamp. (No, no.) Both companies could then make their tenders upon that basis. At present he thought the board was not competent to accept the tender of the new company on the basis of burning by meter, and not to adopt his decision would be departing from a chance of settling the question satisfactorily. He had no interest in either companies, and believed the principle of adopting the lowest tender to be the correct one, provided the board had a guarantee from those who tendered that they could carry out what they promised to do. With the question as to whether the new company would be enabled to pay, the board had nothing whatever to do; all it had to consider was whether it was competent to carry out the work. If they were, they were bound to accept the new company's tender, if they gave up the idea he had thrown out of burning by meter, which he should like to see carried out. To test the feeling of the board, he would move—"That the matter be referred back to the Gas Contract Committee for them to ascertain and to report as to whether the lamps should not in future be lighted by meter."

The MAYOR seconded the amendment.

Mr. EADEN, in reply to Dr. Waraker, said the doctor had very properly stated that the principle of adopting the lowest tender was the correct one if the tender could be properly carried out. At the same time, the board could not adopt Dr. Waraker's amendment, because to do so would substantially be tantamount to allowing both companies the option of sending in fresh tenders. That would be an unjust proceeding, as the tenders had been opened, inasmuch as it would allow the company who were now the highest to underbid the other.

Mr. WATERS said, with regard to what had fallen from Dr. Phelps, he was sorry that gentleman had thought fit to cast any reflection upon those gentlemen who had shares in the new company. It was very wrong to say that the tender of the new company was an attempt to bribe the commissioners. He trusted those remarks of Dr. Phelps would not have the slightest weight with the commissioners present. But to refer back to what took place in committee. The Gas Contract Committee, of which he was a member, met the directors in a friendly spirit, and the latter named a price which they had since exceeded in their tender. The committee wanted the directors to light each lamp, winter and summer, for £3 10s. The company offered to do it for £3 15s., and now in their tender they actually wanted £3 15s. 8d. Now, if the company had gone through their calculations so carefully as they said they had done when they met the Gas Contract Committee, how came they to charge 8d. on each lamp in excess when they sent in their tender? Dr. Phelps had stated that two companies could not be made to pay in a town like Cambridge. The commissioners had nothing to do with that. Five responsible gentlemen belonging to the new company had asserted that they were willing to supply the lamps with gas at a much cheaper rate than was now being paid, and he contended that it was the duty of the commissioners, under those circumstances, to accept their tender. With regard to the quality and illuminating power of the gas to be supplied, Mr. Nutter would bear in mind that the same specifications were supplied to both companies, and the quality and illuminating power were distinctly named. There was no fear, then, that the board would not be supplied with a gas equal in quality and illuminating power to what the old company could supply. There was another matter to be borne in mind—one which with him was always of great importance—the saving of money. If the town could save something like £4000 in 14 years, it was their bounden duty, as the representatives of the town, to save that amount. This question of gas supply was a serious one for the town, and when they were told by respectable and responsible men—men of business-like habits, knowing what commercial speculations were—that gas could be supplied at a cheaper rate than they were now having it, it would be something akin to madness to throw away £250 a year on the old company annually. He had no interest in either company, but he represented the largest parish in the town, and he must do what he thought the best for their interest, and he believed he should be doing so by supporting the committee's report.

Mr. H. H. HARRIS wished to ask the clerk if the shareholders of the old company would be precluded from voting. He thought not, as their tender was not at all before the board.

The CLERK said they could not vote.

Mr. EADEN said, to make the matter fair, no doubt those gentlemen who were shareholders in the new company would abstain from voting.

Mr. LILLEY said he presumed Dr. Waraker's amendment was now fairly before the meeting. In one of the tenders sent in, he (Mr. Lilley) found express mention made of an offer to light the public lamps at the rate of 3s. per 1000 feet, if burnt by meter. The mention of that, he thought, formed a very reasonable ground why Dr. Waraker's amendment should be seriously considered by the board. Let them look at the whole question now before them; it really was not their duty simply to accept the lowest tender, for very serious results were involved. They had to look at what might follow the acceptance of this cheap tender. The inevitable result of accepting it would be the breaking up of the streets to lay down new mains, and then, if the company took powers to extend their lighting to private consumers, there would be interruption to the street traffic for a series of years; and the result would be, that an ill-feeling would arise between the two companies in endeavouring to secure custom. But the most important result, as far as the competing companies were concerned, would be that both must realize bad dividends. Now he could not go so far as Dr. Phelps had done, to say that the tender of the new company was intended as a bribe to the commissioners, but still there were many considerations and contingencies attaching themselves to the formation of a new company, which ought to make them, as a board, pause before they took this step. Gas manufacturing was not like other trades, it was more dangerous. Again, it must be borne in mind that there was scarcely any town of the size of Cambridge able to support two companies, or to pay their shareholders more than 5 per cent. The natural sequence would be that, after some time of hard fighting to secure custom, both companies would get tired of bad dividends. They would amalgamate, and the practical effect upon the ratepayers of the town would be, that they would have to pay an increased price for their gas. The ratepayers would have to pay interest on the capital employed in two large establishments, and for two staffs of officials, instead of one. For these reasons he thought the lowest contract should not be accepted without great consideration. Although a shareholder in the old company, he was not one of those who were so warmly wedded to its management; he had frequently differed with the policy which the directors had thought fit to adopt, and in reference to the payment of back dividends, thought the directors of the company had been wrong in pressing that point. Undoubtedly to press that point strongly was a suicidal act; and, no doubt, it was mainly owing to that back dividend question that a new company had been brought into the field. That day he hardly knew what to do—whether to vote for the committee's report or the amendment. He felt certain that two companies would be a bad thing; and, as he considered that there were very weighty arguments in favour of one company only, he had resolved to support Dr. Waraker's amendment, as holding out yet some hope of a compromise.

Mr. APTHORPE would just like to refer to one or two matters in connexion with this subject. Dr. Phelps had introduced into the matter a vast amount of——

The CHAIRMAN, interrupting, advised the speaker to refrain from personalities.

Mr. APTHORPE continued: Well, to come to the contract. A good deal had been said that they had no guarantee that the new company could perform their promise; all he could say in reply was, the board could compel them to carry it out. When the contractor for the sewers failed to do his work, the board compelled his sureties to do it. The names of the provisional committee of the new company were a sufficient guarantee that there were men belonging to it thoroughly acquainted with business matters, who

knew what they were about in making this offer, and were they to be impugned as business men? It was clearly the best and cheapest way to accept the lowest tender. Mr. Balls, who he would credit for having spoken in a manly way about the back dividends, had said that the committee in the House of Commons had decided that the company had a right to the back dividends. Now, the truth was, nothing of the kind occurred The words of the chairman of the committee were, "We leave you where we found you." He (Mr. Apthorpe) represented a parish of 11,000 persons at that board, and he should, all circumstances considered, feel it his duty to vote for the lowest tender. With regard to the old company, he had no ill-feeling towards them, and he would speak the truth respecting them. The gas had been better of late; but he did say that the board had received such treatment from the gas company on various occasions that he fully believed, when the new contract was entered into, the contract would be carried out to the letter of the law. He could not conclude without again repeating that he was much surprised at the language Dr. Phelps had thought fit to make use of that day.

Mr. BRADWELL said before the board committed itself to a new company, he would answer the remark made by Mr. Apthorpe, and say that it was not always policy to accept the lowest tender. This town had had ample experience that there was nothing to be gained by trying to have the work cheaply done. On several occasions work had had to be done twice in consequence. The matter Mr. Apthorpe had referred to was a case in point. By accepting the tender of the new gas company, legal proceedings might be involved, and a good deal of money spent before an understanding was arrived at. They did not want, as a matter of policy, to bring any element of ill-feeling into the town. Let the old gas company be asked to give way. Surely it was not too late to come to some terms even now.

Mr. FRENCH said it must be borne in mind that the new company was started on the limited liability principle, while the old one was an unlimited company. Therefore, if the new company failed, the board had no security beyond the liability of the shareholders to the extent of their respective shares. It really was a very serious matter for the town.

Mr. WETENHALL said it was all owing to the back dividends question, which had brought about this competition. The chairman of the committee of the House of Commons said, in reference to the back dividends, "We decline to interfere with the old capital or its rights; we leave it as we found it." But the committee showed its opinion on the matter by allowing the new capital only to realize 7 per cent. He knew of no principle of commercial policy with regard to the taking of back dividends. If the company had accepted advice, they would not have been in the position they now were. Dr. Phelps and Mr. Balls had repeatedly said that they were determined not only to have 10 per cent. on their old capital, but also the back dividends. That remark was sure to provoke opposition in the minds of the public. There was a double reason why the board should vote for the new company's tender: not only were they to save £4000 in 14 years by the contract, but the private consumer would get his gas at a cheaper rate. He could lean with great sympathy towards the old company if he could see his way to doing so. But when he saw that a saving of £4000 in 14 years would provide them with 80 additional lamps, he could not hesitate as to the course he should pursue.

A division was then taken upon Dr. Waraker's amendment, when there were 9 hands held up in its favour and 16 against. It was therefore declared lost.

Dr. FAWCETT rose to propose another amendment. He was a shareholder in the old company, although not an original one, as he had purchased his shares at a premium of 7 per cent. He was ready to waive back dividends. He would suggest to the gas company to give up the £250 which was in dispute.

Mr. WATERS (interrupting): It is not so much as that.

Dr. FAWCETT resumed: The amount would not affect the argument. He did hope that some agreement would be come to, to avoid discord and agitation in the town. It was very desirable, if possible, to prevent that. It had been stated that morning that two companies in a town like Cambridge could not supply gas at a remunerative price. He did not think it was possible. The Master of Sidney and chairman of the gas company had thrown out a suggestion which was worthy of consideration. It was "better to endure the ills we have than fly to others we know not of." Entertaining that idea, he would submit that the whole matter be referred to arbitration. Let three competent gas engineers consider the matter, and the decision of the majority be final. (No, no.) Dr. Fawcett's amendment was as follows:—"That the whole question of the cost of lighting the public lamps be referred to three competent gas engineers, on condition that the decision of a majority be final and binding on the Cambridge University and Town Gas Company, and that the price do not exceed that tendered by the said gas company."

Mr. APTHORPE handed in the following protest:—"I hereby protest against any shareholder of either the old or new gas company having the right of proposing or seconding any proposition relative to gas lighting the town at this meeting."

The motion was not seconded or pressed, being found to be illegal.

The MASTER of St. JOHN'S, believing that competition in most things was good, was still of opinion that the town in the long run could not gain by having two companies; he should therefore vote against the report.

On a division, there were 18 hands held up for the original report and 6 against. The committee's report was then declared carried, and the board adjourned, after a sitting of nearly two hours duration.

DEFICIENT SUPPLY OF GAS AT DOVER.

At a Meeting of the Dover Local Board, held on Thursday, the 19th ult., Alderman REES called attention, in very strong terms, to the quality of the gas now being supplied by the Dover Gaslight Company. He said the company possessed a monopoly, and made the town pay very extravagantly for a very short supply, which was also deficient in quality; in fact, the quality was most abominable—so bad, indeed, that he had been obliged to burn candles as well as gas in his own house.

The TOWN-CLERK said he had all along advised that the gas should be properly tested. It was a question that ought to be immediately grappled with.

The SURVEYOR said there were very few towns of the size of Dover without a testing apparatus.

Mr. AYERS also bore testimony to the bad quality and deficient quantity of the gas supplied, and said that on Sunday night last the dark appearance of the streets reminded him of olden times, when oil lamps only were used.

Alderman REES called upon the town-clerk to appeal to the townspeople to support him in getting up a new gas company in the borough Then, they would be supplied with gas fit for use. At the present time the town was being supplied with gas that was neither good for light nor health.

Mr. LEWIS advised that the next meeting of the board should be made special, to consider the question.

Alderman REES said it would be better to ask the townspeople to come to a public meeting and argue the question, for the sake of their own health and convenience. It would be better for the town to be in darkness for a month than to continue as it was.

Mr. BIRMINGHAM said it appeared to him there should be a means of testing the gas provided, as in other towns.

Alderman REES said he hoped that the publicity that would now be given to the subject would cause the evil to be remedied. A member had said, "Get a test;" but he could say that he had himself, by letter and verbally, brought this matter under the notice of the gas company. They acknowledged that the gas was bad, but took no steps to improve it. They know the reason why the gas is bad, and make no effort to remove that reason. The only remedy, he said, was to establish another company. He himself had a test at home, and it showed they were being poisoned instead of being lighted. In conclusion, he asked the town-clerk if there were no penalties that might be enforced against the company.

The TOWN-CLERK said he would report upon the powers of the board with respect to the gas contract at the next meeting of the board.—*Dover Telegraph.*

AVERAGE COMPOSITION AND QUALITY OF THE METROPOLITAN WATERS, DURING THE YEAR 1867.—The following are the returns of the Metropolitan Association of Medical Officers of Health:—

NAMES OF WATER COMPANIES.	Total Solid Matter per Gallon.	Loss by Ignition.*	Oxidizable Organic Matter.†	Hardness.		Organic and other Ammonia.
				Before Boiling.	After Boiling.	
Thames Water Comps.	Grs.	Grs.	Grs.	Degs.	Degs.	Grs.
Grand Junction	20·29	1·07	0·700	13·0	4·2	0·003
West Middlesex	19·34	1·05	0·747	12·5	4·1	0·003
Southwark and Vauxhall	19·47	0·99	0·816	12·9	4·1	0·003
Chelsea	20·20	1·19	0·794	12·7	4·1	0·003
Lambeth	19·92	1·18	0·817	12·9	4·0	0·003
Other Companies.						
Kent	27·32	0·76	0·184	16·6	7·7	0·002
New River	18·45	0·86	0·403	12·5	4·0	0·002
East London	20·15	1·06	0·624	12·7	4·4	0·003

HY. LETHEBY, M.B.

* The loss by ignition represents a variety of volatile matters, as well as organic matter, as ammoniacal salts, moisture, and the volatile constituents of nitrates and nitrites.

† The oxidizable organic matter is determined by a standard solution of permanganate of potash—the available oxygen of which is to the organic matter as 1 is to 8; and the results are controlled by the examination of the colour of the water when seen through a glass tube 2 feet in length and 2 inches in diameter.

The fluctuations in the amounts of the several constituents have not been considerable, but the proportions are always a little above the average during the early months of the year when there is much rain, and they are less than the average in the dry summer months. The Kent water is remarkable for its beautiful blue colour when seen in large volume, on account of the nearly total absence of organic matter.

DR. FRANKLAND'S ANALYSIS OF THE METROPOLITAN WATERS IN DECEMBER, 1867.—"Royal College of Chemistry, Dec. 24, 1867.—Sir,—I have the honour to submit to you in the following table the results of the chemical examination of the waters supplied to the metropolis during the month of December. For the purpose of comparison I append also the results yielded by Loch Katrine water, as supplied to Glasgow, and by the waters supplied to the towns of Lancaster, Manchester, and Leicester when submitted to the same analytical processes:—

Companies.	Date and Place of Collection.	Total Solid Impurity in 100,000 Parts.	Organic Carbon.	Nitrogen, as Nitrates and Nitrites.	Ammonia.	Total combined Nitrogen.	Previous Sewage Contamination (Estimated).	Total Hardness.
Thames.								
Chelsea	Dec. 2—Cab Rank, Horse Guards	29·8	·202	·243	·002	·252	2130	21·7
West Middlesex	Dec. 2—Cab Rank, Portland Road	29·6	·174	·266	·000	·291	2340	22·8
Southwark & Vauxhall	Dec. 2—Barclay's Brewery	29·6	·217	·228	·001	·239	1970	21·7
Grand Junction	Dec. 6—Cab Rank, Woodstock Street	29·0	·396	·269	·001	·289	2380	20·8
Lambeth	Dec. 2—Cab Rank, Lambeth Road	29·8	·216	·239	·000	·273	2070	22·8
Other Sources								
New River	Dec. 2—Cab Rank, Tottenham Ct. Rd.	29·8	·104	·298	·000	·301	2660	22·8
East London	Dec. 6 — Slater's Lamp-black Wks. Old Ford Road	31·0	·141	·208	·000	·212	1760	23·1
Kent	Dec. — Company's Main, Bromley	31·8	·142	·413	·123	·516	4820	24·6
Loch Katrine	Feb.—Glasgow	3·28	·256	·031	·002	·041	0	0·3
Lancaster	Sept.—Lancaster	3·54	·157	·036	·001	·038	0	0·1
Manchester	Nov.—Manchester	6·8	·242	·001	·001	·028	0	2·7
Leicester	Nov.—Leicester	23·7	·506	·001	·001	·022	0	13·4
Column 1	2	3	4	5	6	7	8	9

The numbers in columns 3, 4, 5, 6, 7, 8, and 9 all relate to 100,000 parts of the waters. The table is to be read thus: 100,000 lbs. of Chelsea water collected on Dec. 2 at the Horse Guards cab rank contained 29·8 lbs. of solid impurity; the organic matter, constituting a portion of this impurity, contained ·202 lb. of carbon. This solid impurity also contained ·243 lb. of nitrogen in the form of nitrates and nitrites, besides ·002 lb. of ammonia, whilst the total amount of *combined* nitrogen in every form was ·252 lb. The above quantity of water supplied by the Chelsea Company had been, after its descent to the earth as rain, contaminated with sewage or manure matter equivalent to 2130 lbs. of average filtered London sewage. By gradual oxidation, partly in the pores of the soil, partly in the Thames and its tributaries, and partly in the reservoirs, filters, and conduits of the company, this sewage contamination had been converted into comparatively innocuous inorganic compounds before its delivery to consumers. Finally, 100,000 lbs. of the Chelsea Company's water contained 21·7 lbs. of carbonate of lime, or an equivalent quantity of other soap-destroying ingredients. The waters delivered by the Southwark and Grand Junction Companies were turbid when drawn from the mains, the remaining waters were transparent. The results of the analysis of the Kent Company's water collected this month at Bromley show that it is of an entirely different character from that delivered by the same company at Deptford. Not only is the previous sewage contamination of the Bromley water very high, but the presence of a large amount of ammonia shows the contamination to have occurred very shortly before the water was delivered to consumers. The use of this water for domestic purposes is very undesirable.—I have, &c., E. FRANKLAND.—The Registrar-General, &c.

DR. LETHEBY'S QUARTERLY REPORT ON THE QUALITY OF THE GAS SUPPLIED TO THE CITY OF LONDON.—In the course of the quarter which expired on the 30th of November last, 669 examinations were made of the illuminating power of the gas supplied to the City. Each of the examinations was the mean of ten observations, and they were made in accordance with the instructions of the Act of Parliament. The following are the results in standard sperm candles:—

	Gt. Central Gas.	Chart. Gas.	City Co.'s Gas.
Maximum	16·52	16·36	15·69
Minimum	12 02	12·57	12·00
Average	13·96	14·31	13·75

It thus appears that the illuminating power has been constantly above the requirements of the Act of Parliament, and to the extent of about two candles. In the corresponding quarter of last year the average illuminating power of the Great Central gas was 13·89 candles: of the Chartered gas, 14·19 candles; and of the City Company's gas, 14·17 candles, all of which numbers are close to the averages of the present quarter. The chemical quality of the gas, as regards the amount of sulphur contained in it, has not been so satisfactory, for, excepting the Chartered gas, the quantity of sulphur has generally been excessive. This will be seen from the following table, showing the grains of sulphur per 100 cubic feet of gas:—

	Gt. Central Gas.	Chart. Gas.	City Co.'s Gas.
Maximum	34·61	26·30	30·58
Minimum	12·74	11·35	14·19
Average	21·87	18·73	22·97

In fact, of the 61 observations made during the quarter of the City Company's gas, 42 were found to be in excess of the quantity sanctioned by Parliament; of the 60 observations of the Great Central gas, 41 were in excess; and of the 61 of the Chartered gas, only 21 were in excess. The gas of each of the companies has been at all times free from sulphuretted hydrogen; and, with the exception of the Chartered gas, it has also been free from ammonia. Lastly, I have to report that the pressure at which the gas has been delivered to the laboratory has been rarely under an inch of water.

THE MULLINGAR GAS COMPANY, LIMITED.—The *Dublin Gazette* recently contained a notice to the effect that this company be forthwith wound up, and Messrs. William Farrell and Thomas Smyth, both of Mullingar, were appointed liquidators of the company, for the purpose of carrying the winding up into effect. These gentlemen have arranged with Mr. Hollwey, of Prospect, near this city, for the complete purchase of the late company's property of works, mains, meters, &c. The arrangements having been completed, Mr. Hollwey has taken up possession of the premises; and, from the engineering experience he possesses, combined with his usual vigorous management, we have every reason to consider the speculation will prove not only profitable to him, but also advantageous to the public of the improving town of Mullingar.—*Kilkenny Moderator.*

EXPLOSION OF GAS IN A SUBWAY.—An explosion of gas took place at Lille two days back in the underground conduits which pass beneath the Rue des Douze Apôtres. The pavement was blown up, and the houses, for a distance of 100 yards, were shaken to their foundations and the windows broken. The detonation was as loud as the discharge of a piece of artillery. Fortunately no person was passing at the moment.

RESIGNATION OF THE MANAGER OF THE SOUTHAMPTON GAS-WORKS.—At a meeting of the directors of the Southampton Gas Company, on Friday, the 20th inst., a letter was read from Mr. James Sharp, the engineer and manager, sending in his resignation on account of his age, 77 years. Thereupon (infinitely to the credit of the directory) a most gratifying and unanimous resolution was passed, expressing the great regret of the directory at such an announcement, and followed up by an equally gratifying and most generous proposition, viz.,—"That a superannuation of £200 per annum be allowed to Mr. Sharp for the remainder of his life." Having had the happiness of Mr. Sharp's acquaintance and friendship from the time he commenced his duties in Southampton in the year 1846, we heartily rejoice that our old friend's declining years will be so well provided for, and truly he deserves such recognition of his past services. For the information of those of our readers who may not be aware of Mr. Sharp's antecedents we furnish a short sketch of this most worthy and talented man. It is always a difficult matter to find out a "first inventor," but in 1830 Mr. Sharp gave a lecture in Northampton on cooking by gas, on which occasion mutton, pork, and fowls were roasted, vegetables, fish, and puddings boiled, and pies and tarts baked by his "great kitchen in little space;" and the able editor of the *Expositor* (a gentleman, by-the-by, perfectly unknown to Mr. Sharp), who wrote on the various articles of science and art shown in the Great Exhibition of 1851, writes thus:—"In gas cooking, although there was no patent, yet there was abundant publicity to prove that Mr. James Sharp was the first contriver, or at all events, beyond all doubt, the first maker and exhibitor of a gas cooking apparatus." M. Soyer also declares that among the many contrivances for cooking by gas none were equal to Mr. James Sharp's plan. A pamphlet published by Mr. Sharp in 1850 on the subject contained a very large number of testimonials from the inhabitants of this borough, and it is satisfactory to know that in every instance the same approbation is now given. The various lectures (all gratuitous) given by Mr. Sharp in this and other localities, not only on the use and application of gas, but on many other scientific subjects, all proved the true and genuine desire of his heart, which was to extend knowledge and information to the people in the most practical form. We have a vivid recollection of one lecture on cookery by Mr. Sharp, delivered in the large Victoria Room, some years ago, during which, in the same room, was cooked by gas an extensive supper of roast and boiled meats, fowls, &c., together with vegetables, which was afterwards partaken of by a large company in the adjoining ante-room. It was, as we well remember, in every respect the perfection of cookery. One great feature of this practical experiment was this, that although there were within the apparatus so many specimens, the flavour of no one joint, &c., was in the slighest degree imparted to the other, as is the case with the old fashioned oven. This applies even to the experiment at the time of roasted onions, if we remember rightly. We hear that Mr. Sharp had previously given a similar practical lecture in the Polytechnic department of Hanover Buildings, Southampton. In Southampton his untiring efforts to give satisfaction to the consumer have always been beyond all praise. Places of worship, large factories, private houses, or shops—wherever there was cause for complaint, there was Mr. Sharp ready and able to cure. His motto was not "No cure no pay," but, to his honour be it spoken, he would never take the smallest fee or reward, and, with the modesty of the true and faithful man, his ready reply was, "I am only doing my duty." The various votes of thanks from different institutions our friend has received, and to which he looks with pride and satisfaction as they hang on his walls, prove that he is no ordinary man; and those who have not had the opportunity of looking through his most scientific and beautiful laboratory have lost a treat of no common kind. In conclusion we express our earnest hope that he may long continue to enjoy the *otium cum dignitate* to which the labours of a long, active, and useful life have entitled him, and may his declining prove his happiest years. Mr. Sharp has been succeeded by Mr. S. W. Durkin, who has been his assistant for 15 years.—*Hampshire Advertiser, Dec.* 28.

Share List of Metropolitan Gas Companies.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum	Price per Share.
	£		£ s d	£ s d	£ s d
8000	10	Anglo-Romano . .	10 0 0	9 0 0	11 to 12
5000	20	Bahia (Limited) . .	20 0 0	nil.	
1000	20	Do., preference .	20 0 0	10 0 0	27 10 0
750	20	Do., do., redeem.	10 0 0	10 0 0	12 10 0
40000	5	Bombay (Limited).	5 0 0	5 0 0	4½ to 4¾
10000	5	Do., third issue .	3 0 0	5 0 0	2¼ to 2⅜
10000	20	British, Limited . (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton (Potteries), Trowbridge, & Holywell.)	20 0 0	6 0 0	28 to 29
12000	50	*Chartered*	50 0 0	6 10 0	45 0 0
6000	50	Do.	40 0 0	6 10 0	34 0 0
10000	20	*City of London*, A shares	20 0 0	9 0 0	22 to 24
10000	10	Do., B shares	10 0 0	4 0 0	6½ to 7
9629	10	Do., new shares.	10 0 0	9 0 0	11 to 12
25000	2	City of Moscow (L)	25 0 0		10 to 11
17490	25	*Commercial* . . .	25 0 0	10 0 0	32 to 33
20000	20	Continental Union.	20 0 0	4 0 0	13 to 14
10000	20	Do., preference .	20 0 0	7 0 0	
5827	5	County & General (Limited) . .	5 0 0	nil.	
2000	5	Do., preference . (Pater, Pembroke, Ely, Lea Bridge, Northfleet, Walton, & Ware.)	5 0 0	nil.	
5000	10	*Crystal Pal. Dist.*	10 0 0	10 0 0	13½ to 14
5000	10	Do., preference .	10 0 0	6 0 0	12½ to 13
10000	10	Do., new shares .	2 10 0	7 0 0	2½ to 3

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
4000	50	*Equitable*	50 0 0	10 0 0	64 to 65
4000	25	Do., new shares.	25 0 0	10 0 0	32½ to 33
23406	10	European (Lim.) .	10 0 0	10 0 0	12½ to 13¼
12000	10	Do., new shares. (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	10 0 0	7 to 7⅛
20000	10	*Gt. Cent. Gaz Cons.*	10 0 0	10 0 0	12½ to 12¾
5000	10	Hong Kong (Lim.)	10 0 0	5 0 0	8 to 10
26000	50	*Imperial*	50 0 0	10 0 0	64 to 65
1300	100	Do., bonds . . .	£100	10 0 0	170 to 175
2391	25	Imperial Austrian.	25 0 0	nil.	
28000	50	*Impl. Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Stolberg, Toulouse, & Vienna	43 15 0	16 0 0	92½ to 93¾
400	100	Impl. Mexican (L.)	100 0 0	nil.	
200	100	Do., new	100 0 0	nil.	
3000	40	*Independent* . . .	40 0 0	10 0 0	50 to 53
3000	10	Do.	10 0 0	5 0 0	7 to 9
3000	20	Do.	12 10 0	7 10 0	13 to 14
7133	50	*London*	50 0 0	10 0 0	62 to 63
5610	25	Do., 1st pref. .	25 0 0	6 0 0	25 to 26
503	50	Do., 2nd pref. .	50 0 0	6 0 0	
214	50	Do., 3rd pref. .	50 0 0	6 0 0	
18781		Do., 1st pref. sk		6 0 0	
11828		Do., 2nd pref. sk		5 0 0	

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
12000	5	Malta & Medit. (L.)	5 0 0	4 0 0	3¼ to 4
6000	5	Do., preference .	5 0 0	7 0 0	5 0 0
30000	5	Oriental, Calcutta	5 0 0	9 0 0	6½ to 6⅝
30000	5	Do., new shares.	1 0 0	9 0 0	1½ to 1⅝
10000	5	Ottoman (Limited)	5 0 0	nil.	1⅞ to 2¼
10000	10	Pará (Limited) .	10 0 0	6 0 0	8⅝ to 9
27000	20	*Phœnix*	20 0 0	10 0 0	25 to 26
3600	100	Do., new	35 0 0	7 10 0	35 to 36
144000	Stk.	Do.	100 0 0	5 0 0	70 to 72
5000	20	*Ratcliff*	20 0 0	10 0 0	22 to 24
	20	Rio de Janeiro (L).	20 0 0	10 0 0	22 to 23
6959	5	Singapore (Lim.) .	5 0 0	3 0 0	
2000	5	Do., preference . Shanghai	5 0 0	7 10 0	
4800	50	*Sth. Metropolitan*	50 0 0	10 0	70 to 71
15000	10	*Surrey Consumers*	10 0 0	9 0 0	12 to 12¼
10000	10	Do., new	6 0 0	9 0 0	6 to 6¼
9000	4	United General . . (Limerick)	4 0 0		2 to 2¼
10000	10	*Victoria Docks* .	5 0 0	6 0 0	
1500	10	*Wandsw. & Putn.*	10 0 0	10 0 0	10 0 0
2989	10	Do.	10 0 0	7 10 0	
316	10	Do.	6 10 0	7 10 0	
1128	10	Do.	3 0 0	7 10 0	
20000	10	Western (L.) Ash.	10 0 0	10 0 0	13⅞ to 14¼
10000	10	Do., B shares.	5 0 0	10 0 0	6⅞ to 7
10000	10	Do., C shares.	5 0 0	10 0 0	6⅞ to 7
20000	10	Do., D shares.	1 0 0	10 0 0	1¾ to 2
8000	5	*West Ham*	5 0 0	7 10 0	6 10 0
6000	5	Do., new shares.	3 0 0	7 10 0	3 18 0
551	10	W. Lon. Junc. (L.)	10 0 0	6 0 0	
520	10	Do., preference .	10 0 0	6 0 0	

Share List of Provincial Gas Companies.

(Directors and Managers of Gas-Works are earnestly requested to enable us to rectify any errors and fill up the omissions in the following List.)

The Companies whose names are printed in italic type are incorporated by Act of Parliament.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£	**ENGLAND.**	£ s d	£ s d	£ s d
360	5	Aberavon (Lim.)	5 0 0	6 0 0	5 0 0
		Aberdare			
		Aberdovey			
400	5	Abergele (Lim.)	5 0 0	4 0 0	5 0 0
		Abertillery G. & W.			
		Aberystwith			
530	10	Abingdon	10 0 0	6 0 0	12 0 0
1050	10	*Accrington G. & W.*	10 0 0	& Bns.	15 0 0
1050	10	Do., new shares.	10 0 0	15 0 0	
2100	5	Do., do.	5 0 0	7 10 0	
2100	5	Do., do.	1 0 0	1 10 0	
2100	2½	Do., do.	0 10 0	0 15 0	
1200	5	Airdale (Limited)	5 0 0 10 0 0	8 10 0	
300	5	Do., new shares.	0 10 0 8 0 0		
24	75	Alcester	75 0 0 4 0 0	80 0 0	
128	10	Aldborough (Lim.)	10 0 0 5 0 0		
269	10	Alderney	10 0 0 5 0 0	11 0 0	
2500	10	Aldershot G. & W.	6 0 0 4 0 0		
		Aldrington, B., & H.			
300	6	Alfreton	6 0 0 5 0 0	5 10 0	
		Alnwick			
		Alston Moor			
250	10	Alton	10 0 0 10 0 0	12 0 0	
1600	5	Altrincham	5 0 0 6 0 0	6 0 0	
		Amblesd. Dis. £8000.			
		Amersham			
		Amlwch (Lim.)			
170	10	Ampthill	10 0 0 4 0 0	9 0 0	
350	10	Andover	10 0 0 6 0 0	12 10 0	
358	5	Appleby	5 0 0 2 10 0	2 15 0	
260	10½	Arundel	10 10 0 7 10 0		
250	10	Ashbourne, Derby.	10 0 0 6 0 0	13 10 0	
292	5	Ashburton	5 0 0 5 0 0		
84	30	Ashby-de-la-Zouch	30 0 0 6 0 0		
700	10	Ashford (L.), Kent	10 0 0 6 0 0	11 10 0	
1600	30	*Ashton-und-Lyne.*	30 0 0 10 0 0	60 0 0	
		Aspatria			
590	5	Atherstone	5 0 0 9 0 0	8 10 0	
		Attleborough			
		Axminster			
200	20	Aylesbury	20 0 0 5 0 0	21 0 0	
150	10	Aylsham (L.), Nrfk.	10 0 0 5 0 0	12 10 0	
3093	10	*Bacup (Rossendale Union)* ordinary	10 0 0 10 0 0	& Bns. 16 0 0	
600	10	Do., preference.	10 0 0 10 0 0	16 0 0	
2597	10	Do., new issue	6 0 0 10 0 0	11 0 0	
1503	10	Do., 2nd new iss.	8 0 0 7 0 0	10 0 0	
300	5	Bakewell	5 0 0 8 0 0	8 0 0	
200	10	Baldock	10 0 0 5 0 0	10 0 0	
1000	10	*Banbury* (Limited)	10 0 0 8 10 0	15 15 0	
500	10	Do., new shares	7 10 0 7 0 0	10 10 0	
2650	10	*Bangor Gas & Wr.*	10 0 0 7 10 0	12 0 0	
		Barking			
		Barmouth (L.) £1500			
260	10	Barnard Castle	10 0 0 5 10 0	10 15 0	
800	5	Barnet	5 0 0 6 0 0	5 10 0	
		Barnsley	7 10 0		
109	20	Barnstaple	20 0 0 7 10 0		
		Barrow-in-Furness Gas and Water		& Bns.	
1158	2	Barton-on-Humb.	2 0 0 5 0 0	2 0 0	
120	25	Basingstoke	25 0 0 8 0 0	35 0 0	
120	10	Do.	10 0 0 8 0 0	14 0 0	
		Baslow (Derby)		1 10 0	
2500	16	*Bath*, A shares.	16 0 0 8 0 0	38 10 0	
2500	8	Do., B shares.	8 0 0 7 0 0	united	
2500	10	Do., C shares.	10 0 0 7 0 0	14 8 6	
5000	10	Do., D shares.	3 0 0 7 0 0	4 15 0	
		Battle £2000	6 0 0		
56	26¾	Bawtry	26 12 6 6 0 0	25 0 0	
300	5	Beaconsfield (L.)	5 0 0 4 10 0	5 0 0	
		Beaminster			
710	10	*Beccles Gas & Wr.*	10 0 0 2 10 0		
		Bedale, Yorkshire			
300	30	*Bedford*	25 0 0 4 0 0	20 0 0	
390	10	Bedworth	10 0 0 5 0 0	10 0 0	
300	3	Belford	3 0 0	1 10 0	
400	10	Belper	10 0 0 10 0 0	19 to 20	
		Berkhampstead			
1086	10	Berwick & Tweed-	10 0 0 10 0 0	16 0 0	
120	20	Bewdley [mouth	16 0 0 5 0 0	16 0 0	
200	10	Bicester	10 0 0 5 10 0	11 0 0	
		Biddulph, Bradley Gr., & Black Bull			
330	10	Bideford	10 0 0 6 0 0	10 10 0	
		Biggleswade			
		Billericay			
6000	5	*Bilston*	5 0 0 8 0 0	6 7 6	
200	10	Bingham	10 0 0 4 0 0		
		Birchington (Lim.)			
1200	80	*Birmingham*, A sh.	80 0 0 9 0 0	135 0 0	
400	8	Do., B shares.	8 0 0 9 0 0	13 10 0	
3750	40	Do., new shares.	40 0 0 7 10 0	56 10 0	
2400	50	*Birmnghm. & Staff.*	50 0 0 10 0 0	98 0 0	
2400	25	Do., new shares.	25 0 0 10 0 0	49 0 0	
7020	20	Do., do.	20 0 0 10 0 0	39 5 0	
12500	28	Do., do.	13 0 0 7 10 0	19 10 0	
250	16	*Birstall*	12 0 0 12s. 6d. per sh.	12 0 0	
		Bishop's Auckland			
180	10	Bishop's Castle	10 0 0 5 0 0	10 0 0	
230	10	Bishop's Stortford	10 0 0 5 0 0	10 0 0	
		Bishp's Wlthm (L)			
6000	15	*Blackburn*, A sh.	15 0 0 9 0 0	27 0 0	
6000	15	Do., B shares.	2 0 0 6 15 0	3 10 0	
	5	Blaenavn. (L.) £4000			
		Blaenavon G. & W.			
		Blandford			
		Blyth & Cowpen			
		Bodmin			
		Bodmin Consumers			
100	10	Bolsover	10 0 0	10 0 0	
3909	16¼	*Bolton*	16 10 0	10 0 0	35 0 0
7466	16¼	Do., new shares.	12 0 0	6 10 0	
		Boroughbridge (L.)			
2000	10	*Boston*	10 0 0	8 10 0	17 10 0
	5	Boston Spa (Lim.)	5 0 0	6 10 0	5 10 0
		Botesdale (L.), Suff.			
	5	Bottesford. (L) £1500			
200	5	Boughton Blean	5 0 0	5 0 0	5 0 0
193	10	Bourn	10 0 0	5 0 0	
		Bournemth. G. & W.			
160	10	Brackley	10 0 0	6 0 0	10 0 0
		Bracknell (Lim.)			
		Bradford, Wilts			
	25	*Bradford, Yorksh.*	25 0 0	10 0 0	49 0 0
		Braintree			
		Brampton, Cumb.			
		Brandon, Suffolk			
579	10	Brecon (Limited)	10 0 0	10 0 0	18 to 20
897007	Sk.	*Brentford*	All.	5 10 0	124 0 0
2000	20	Do., A shares.	1 0 0	7 10 0	
2187	20	Do., preference.	20 0 0	5 0 0	20 0 0
313	20	Do.	5 0 0	5 0 0	3 0 0
		Brentwood			
		Bridge, near Cant.			
		Bridge-end, Glam.			
		Bridgenorth (L)			
200	50	*Bridgwater*	50 0 0	7 0 0	50 0 0
520	10	Bridlington (L)	10 0 0	7 10 0	12 10 0
450	10	Bridport	10 0 0	7 10 0	12 0 0
450	10	Do., new shares.	3 0 0	7 10 0	
6000	5	*Brierly Hill*	5 0 0	4 0 0	5 2 6
		Brigg			
		Brightlingsea (L.)			
3375	20	*Brighton*	20 0 0	7 0 0	17 to 18
675	20	Do., new shares	4 0 0	7 0 0	
4020	20	*Brighton & Hove*	20 0 0	6 0 0	17 to 18
		Brimscombe (L.)			
204500	Sk.	*Bristol United*	Stock.	10 0 0	180 to 182
300	5	*Briton-ferry*	5 0 0		
150	8	Brixham	8 0 0	5 0 0	
		Broadstairs			
2000	10	*Bromley*, Kent	10 0 0	8 0 0	14 10 0
3000	10	Do., new shares.	3 0 0	8 0 0	4 4 0
		Bromsgrove			
100	10	Bromyard (Lim.)	10 0 0		
		Broughton			
120	10	Bruton	10 0 0	4 0 0	8 to 9
		Brymbo			
		Brynmawr			
100	25	Buckingham	25 0 0	6 0 0	26 0 0
		Buntingford (Lim.)			
	5	Burgess Hill & St. John's (L.) £5000			
500	1	Burley-in-Wharfdale (Limited)	1 0 0	5 0 0	1 1 0
		Burnham, Bucks			
		Burnham (L) Essex			
		Burnham, Somers.			
1600	5	*Burslem and Tuns.*	5 0 0	10 0 0	9 0 0
2560	5	Do., new shares.	5 0 0	7 10 0	7 0 0
440	2½	Burton, Westmoreland (Limited)	2 10 0		
1200	10	*Bury St. Edmd's*	10 0 0	10 0 0	19 0 0
1800	4	Do., new shares	4 0 0	7 10 0	5 10 0
303	10	Buxton (Limited)	10 0 0	7 10 0	14 0 0
150	10	Caistor	10 0 0	7 0 0	12 0 0
187	5	Callington	5 0 0		5 0 0
215	10	Calne, Wilts	10 0 0	6 0 0	10 0 0
		Calverley (L) York.			
		Camborne			
600	50	*Cambridge*	50 0 0	10 0 0	93 to 95
160	12½	Do., new shares.	12 10 0	10 0 0	22 10 0
640	8½	Do., do.	4 0 0	10 0 0	6 0 0
240	50	*Canterby. G. & W.*	50 0 0		
240	25	Do., new shares.	25 0 0	£6	
240	12½	Do., do.	12 10 0		
240	6½	Do., do.	6 5 0		
800	25	*Cardiff*, A shares.	25 0 0	10 0 0	45 0 0
1200	25	Do., B shares.	25 0 0	8 0 0	37 0 0
400	25	Do.	15 0 0	8 0 0	24 0 0
		Cardigan (Limited)			
160	25	Carmarthen	25 0 0	5 0 0	30 0 0
	5	Carnarvon			
		Carnfth. (L) £10,000			
		Carshalton			
200	6	Castlecary	6 0 0		5 0 0
200	10	Castle Donnington	10 0 0	6 0 0	12 14 0
249	5	Castleford	5 0 0	5 0 0	5 0 0
400	5	Castletwn, I. of M.	5 0 0	5 0 0	5¼ to 5½
620	2	Cawood (Limited)	2 0 0	4 0 0	
	¼	Charing (L) £1000			
		Chatteris			
300	10	Cheadle	10 0 0	6 0 0	12 10 0
200	50	Chelmsford	50 0 0	8 0 0	70 0 0
200	25	Do., new shares.	25 0 0	8 0 0	35 0 0
2500	16	*Cheltenham*, A sh.	16 0 0	8 0 0	
2500	8	Do., B shares.	8 0 0	7 0 0	
		Do., new shares.		7 0 0	
500	10	*Chepstow*, A sh.			
200	10	Do., B shares.			
600	5	*Chertsey Consumrs*	5 0 0	6 0 0	6 15 0
600	1½	Do.	1 10 0		
600	2½	Do.	1 10 0		
230	10	Chesham	10 0 0	5 0 0	10 10 0
30000	Sk.	*Chester United*	Stock.	10 0 0	172 to 174
30000	,,	Do., preference	,,	7 0 0	129 to 131
535	10	Do., new shares.	10 0 0	7 0 0	14 0 0
250	5	Chester-le-Street	5 0 0	6 0 0	5 0 0
19200	Sk.	*Chesterfield G & W*	100 0 0	5 0 0	178 0 0
400	50	Do., new shares.	50 0 0	5 0 0	52 0 0
	£	Chesterton (L.)	£ s d	£ s d	£ s d
		Chigwl. & Woodfrd. Br. (L.) £10,000.			
		Chippenham			
329	10	Chipping Nort. L.	10 0 0	5 0 0	
100	10	Chipping Ongar	10 0 0	2 10 0	5 0 0
838	20	Chorley	20 0 0	7 0 0	27 0 0
		Chowbent, Lanc.			
		Christchurch			
200	5	ChurchStretton (L)	5 0 0		5 0 0
680	10	Cirencester	10 0 0	5 0 0 & Bns.	11 0 0
		Clay Cross			
		Clayton, Allerton, and Thornton			
257	10	Cleckheaton, A sh.	10 0 0	7 10 0	
257	10	Do., B shares.	10 0 0	7 10 0	
257	10	Do., new shares.	10 0 0	7 10 0	
		Cleethorpes			
550	10	Clevedon (L.)	10 0 0	7 0 0	11 10 0
		Clitheroe			
1132	5	Cockermouth	5 0 0	5 0 0	5 5 0
300	5	Coggeshall	5 0 0		4¼ to 5
900	20	*Colchester*	20 0 0	7 0 0	22½ to 23
		Coleford, Glocester			
		Coleshill (L.) £2000			
160	10	Collingham (Lim.)	10 0 0	5 0 0	10 0 0
		Collumpton			
328	5	Colnbrook, Middsx.	5 0 0	5 0 0	5 0 0
150	20	Colne, Lancashire	20 0 0		36 0 0
150	10	Do., ¼ shares.	10 0 0	£10	18 0 0
150	5	Do., ¼ shares.	5 0 0		9 0 0
150	5	Do., A shares.	5 0 0		9 0 0
150	5	Do., B shares.	5 0 0		9 0 0
150	5	Do., C shares.	2 0 0		5 0 0
1500	10	Colney Hatch	10 0 0	5 0 0	10 10 0
200	25	*Congleton*	25 0 0	5 0 0	31 0 0
320	5	Conway (Limited)	5 0 0		5 0 0
		Corsham			
		Corwen			
1200	10	Cottenham			
1600	25	*Coventry*	25 0 0	8 0 0	35 0 0
	25	Do., new shares.	25 0 0	7 10 0	
400	5	Cowbridge	5 0 0	6 0 0	6 0 0
500	10	Cowes	10 0 0	5 0 0	
		Cradley Heath			
190	10	Cranbrook. £1900	10 0 0	7 10 0	
		Crawley		4 10 0	
		Crayford & Bexley.			
		Crays			
420		Crediton	5 0 0	5 0 0	6 0 0
300	10	Crewkerne	10 0 0	6 0 0	10 0 0
		Crickhowell G. & W.			
		Cricklade (L.) £1000			
200	10	Croft & Hurworth	9 0 0		
1200	1	Crook (Limited)	1 0 0	10 0 0	1 5 0
		Croston (Limited)			
251	5	Crowland	5 0 0	7 0 0	
181	10	Crowle, Lincoln	10 0 0	10 0 0	
8000	5	*Croydon Commrcl.*	5 0 0	7 10 0	7 0 0
		Cuckfield			
230	20	*Dartford*	20 0 0	7 0 0	27 0 0
700	5	Dartmouth (Lim.)	5 0 0	7 0 0	6 0 0
125	20	Daventry	20 0 0	5 0 0	24 8 6
165	10	Dawley	10 0 0	5 0 0	10 0 6
346	5	Dawlish	5 0 0	8 0 0	7 10 0
1400	10	*Deal & Walmer*	10 0 0	6 10 0	12 0 0
1400	1¼	Do.	1 5 0	4 0 0	1 0 0
350	10	Do.	5 0 0	6 10 0	6 0 0
1200	1	Deddington	1 0 0		
		Dedham (L.) £1000			
		Delph, Yorkshire			
500	6	Denbigh	6 0 0	5 0 0	6 0 0
1750	25	*Derby*	25 0 0	10 0 0	51 0 0
		Dereham			
7000	5	*Devonport*	5 0 0	9 0 0	9 0 0
3000	5	Do., preference	4 0 0	5 0 0	4 0 0
7400	5	*Dewsbury & Batley*	5 0 0	10 0 0	10 0 0
3700	5	Do., new shares.	5 0 0	7 10 0	7 10 0
		Diss			
400	5	Dolgelly	5 0 0		
400	2½	Do., new shares.	2 10 0		
160	10	Donnington	10 0 0	5 0 0	10 0 0
340	27½	Dorchester	25 0 0	5 0 0	27 10 0
120	25	Dorking	24 0 0	5 0 0	25 0 0
		Donnington, Linc.			
192	25	Douglas, I. of Man	25 0 0	8 0 0	30 0 0
21945	Sk.	*Dover*	100 0 0	6 0 0	100 0 0
1855	10	Do., new shares.	10 0 0	6 0 0	10 0 0
500	10	Dowlais (Limited)	10 0 0	8 0 0	12 0 0
25	60	Downham Market	60 0 0	7 10 0	
	5	Downton (L) £2000			
		Driffield			
3000	5	*Drighlington and Gildersome*	5 0 0	7 10 0	7 15 0
		Droitwich			
1000	20	*Droylsden*	9 0 0	8 5 0	
900	30	*Dudley*	30 0 0	10 0 0	38 to 40
485	30	Do., pref. sh.	30 0 0	9 10 0	
800	10	Do., new shares	5 0 0	10 0 0	
1500	20	*Dukinfield*	16 0 0	10 0 0	33 0 0
200	10	Dunmow	10 0 0	5 0 0	10 0 0
		Dunstable			
900	10	Durham	10 0 0	10 0 0	£26
900	10	Do., new shares.	5 10 0	10 0 0	
250	10	Dursley, Glouestr.	9 0 0	6 0 0	9 5 0
150	5	Easingwold	5 0 0	5 0 0	
		East Barnet G. & W.		4 10 0	
400	10	Eastbourne	10 0 0	5 0 0	11 0 0
90	20	East Dereham	20 0 0	5 0 0	21 0 0
356	5	East Grinstead	5 0 0	6 0 0	5 0 0
		Easton (Limited)		5 0 0	
1200	5	East Retford	5 0 0	10 0 0	7 10 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
		Eckington & Mosboro' (Limited)			
	10	Edenbdg.(L) £2000			
		Edgware			
		Egremont, Cumb.			
703	6¼	*Elland*	6 10 0	8 0 0	10 0 0
800	5	Elsecar (Limited)	5 0 0	5 0 0	5 12 0
		Eltham			
200	10	Emsworth			
400	5	*Enfield*	5 0 0	5 0 0	5 0 0
		Epping (Limited)			
300	19	Epsom & Ewell	19 0 0		
		Erith			
325	10	*Eton*	10 0 0	5 0 0	10 0 0
700	10	Evesham (Lim.)	10 0 0	7 0 0	11 to 12
1600	25	*Exeter*	25 0 0	8 0 0	40 to 42
250	10	*Exmouth*	10 0 0	5 0 0	10 0 0
58	25	Eye	25 0 0	5 0 0	25 0 0
170	10	Fairford	10 0 0	3 0 0	
		Fakenham(L)£3500			
		Falkingham			
		Falmouth			
100	38	*Fareham*	38 0 0	5 0 0	
223	25	Farnham	25 0 0	7 0 0	35 0 0
		Farnwth.&Karsly.			
		Farringdon			
140	50	Faversham	50 0 0	10 0 0	66 0 0
		Fazeley (L.) £3000			
120	10	Fenny Stratfd.(L.)	10 0 0	5 0 0	11 0 0
	5	Filey	5 0 0	5 0 0	5 0 0
	5	Finedon (L.) £2000			
		Fleetwood			
2400	10	*Folkestone*	10 0 0	7 0 0	13 to 13½
1200	10	Do., new	7 0 0	7 0 0	10 to 10½
280	5	Framlingham	5 0 0	5 0 0	5 10 0
1155	1	Frodsham (Lim.)	1 0 0	7 10 0	1 1 0
320	25	*Frome*	25 0 0	10 0 0	
		Furness G. and W.			
12000	Sk.	*Gainsborough*	All	6 13 4	120 to123
400	20	Do., new shares	9 0 0	6 13 4	10 0 0
170	10	Gillingham (Lim.) Dorset	10 0 0	3 0 0	
103	25	Glastonbury	25 0 0	4 0 0	15 0 0
600	10	*Glossop*	10 0 0	9 0 0	16 0 0
600	5	Do.	5 0 0	9 0 0	8 0 0
1800	10	Do., new shares	6 10 0	7 10 0	8 10 0
1000	25	*Gloucester*, A sh.	25 0 0	10 0 0	42 0 0
856	25	Do., B shares	18 15 0	7 10 0	25 0 0
260	20	Godalming	20 0 0	5 0 0	20 0 0
300	5	Do., new shares	5 0 0	5 0 0	5 0 0
100	20	Do., do.	8 0 0		
100	5	Do., do.	2 0 0		
	5	Golborne (L) £5000			
621	5	*Gomersal*	5 0 0	6 0 0	6 7 6
		Gorleston & Sthdn.			
855	25	*Gosport* [*Dist. Grange & Cartmel*	25 0 0	9 0 0	37 10 0
450	20	Grantham	20 0 0	7 0 0	28 0 0
1000	20	*Gravesend*	20 0 0	5 0 0	21 0 0
		Grays Thurrock			
643	5	Gt. Berkhampstd.	5 0 0	6 0 0	5 10 0
1000	10	*Great Grimsby*	10 0 0	10 0 0	17 0 0
1000	6¼	Do., new shares	4 10 0	10 0 0	8 2 6
700	5	Great Harwood	5 0 0	4 5 0	
280	5	Do., new shares	1 0 0		
210	10	Great Marlow	10 0 0	5 0 0	10 0 0
		Great Stanmore			
		Great Torrington			
450	5	Great Wigston	5 0 0	6 0 0	
150	1	Do., new shares	1 0 0	6 0 0	
1300	10	Guernsey	9 0 0	10 0 0	17 0 0
352	25	*Guildford*, A sh.	25 0 0		
352	3	Do., B shares	3 0 0		
		Do., new shares			
25	100	Guisborough	60 0 0	10 0 0	
		Hadleigh Cons.(L)			
240	5	Hadlow (Limited)	5 0 0		
140	10	Hailsham	10 0 0	6 0 0	10 0 0
40	50	Halesowen	50 0 0	6 0 0	
300	5	Halesworth	5 0 0	7 10 0	6 5 0
240	5	Haltwhistle (Lim.)	5 0 0	4 10 0	5 0 0
		Hampton Court			
1000	10	*Harrogate*	10 0 0	7 10 0	17 0 0
1000	3½	Do., new shares	3 6 8	10 0 0	5 12 6
900	10	Do., do.	10 0 0	7 10 0	12⅞ to 13
6800	5	*Hartlepool G.&W.*	5 0 0	7 0 0	6 17 6
3322	5	Do., new shares	5 0 0	7 0 0	6 17 6
9878	5	Do., do.	1 10 0	7 0 0	
1000	1	Hartley Wintney, Harwich	1 0 0	2 10 0	21s.to23s.
662	6	*Haslingden*	6 0 0	10 0 0	10 0 0
343	6	Do., A shares	4 0 0	10 0 0	6 0 0
1650	25	*Hastings & St. L.*	25 0 0	8 0 0	
1500	20	Do.	12 0 0	7 0 0	
180	10	Hatfield			
	5	Hathrigh (L)£2000			
		Harlow and Sawbridgeworth			
500	5	Havant	5 0 0	3 0 0	5 0 0
120	10	Haverhill	10 0 0	5 0 0	10 0 0
840	5	Hawick	5 0 0	10 0 0	10 0 0
244	5	Haworth	5 0 0		5 5 0
		Hay (L.), Brecon			
		Haydon Bridge			
7500	¼	Hebden Bridge	1 0 0	10 0 0	1 10 0
170	10	Heckington (Lim.)	10 0 0		10 0 0
		Heckmondwike			
120	10	Hedon (Limited)	10 0 0	3 0 0	
145	12	Helston	12 0 0	9 0 0	
250	10	Hemel Hempstead	10 0 0	4 0 0	7 0 0
500	10	Henley (Limited)	10 0 0	5 0 0	10 0 0
		Hereford. £10,000		4 10 0	
300	10	Herne Bay	10 0 0	6 0 0	11 0 0
1300	10	*Hertford*	8 0 0	7 10 0	12 0 0
		Hessle (L.) £1500.			
470	10	Hexham	10 0 0	8 0 0	14 0 0
400	25	*Heywood*	25 0 0	7 10 0	40 0 0
400	25	Do., new shares	25 0 0	7 10 0	37 10 0
400	25	Do., C shares	10 0 0	7 10 0	16 0 0
160	10	Higham Ferrers	10 0 0	7 0 0	12 0 0
		Highworth, Wilts.			
520	5	High Wycombe	5 0 0	6 0 0	6 16 0
330	10	Hinckley	10 0 0	7 10 0	10 0 0
600	5	Hindley, Lancash.	3 0 0		3 0 0
200	20	Hitchin	20 0 0	8 0 0	
200	5	Do., new shares	5 0 0	8 0 0	
880	5	Hoddesden	5 0 0	7 0 0	6 0 0
	5	Hogsthpe(L) £1000			
		Holbeach			
	5	Hollingbourne (L) £2000			
600	20	*Holmfirth*	19 0 0	6 10 0	21 10 0
960	5	Holyhead	5 0 0	6 0 0	6 2 6
		Holywell (*see* Brit.			
98	25	Honiton [Prov.)	25 0 0	3 12 0	20 0 0
1250	1	Honley (Limited)	1 0 0	5 0 0	1 0 0
6	500	Horncastle	£500		
		Hornsey (Lim.)			
1200	2½	Horsforth	2 10 0		2 10 0
193	20	Horsham	20 0 0	10 0 0	26 0 0
	10	Houghton-le-Sprg.	10 0 0	8 0 0	
		Howden			
1700	20	*Huddersfield*	20 0 0	10 0 0	37 5 0
250	20	Do., new shares	15 0 0	10 0 0	
		Hull. [*see* B.Prov. *Hull-Sculcoates*			
210	10	Hungerford	10 0 0	5 0 0	10 0 0
1200	10	*Huntingdon*	10 0 0	8 0 0	16 5 0
		Hurstperpoint			
600	10	*Huyton & Roby*	10 0 0	10 0 0	12 10 0
300	10	Do., new shares	5 0 0	10 0 0	
2500	10	*Hyde*	9 0 0	5 10 0	10 15 0
	5	Hythe (L.) £2000			
400	10	Hythe & Sandgate	10 0 0	6 0 0	10 15 0
		Idle & Eccleshill (*see* Ilford [Airdale)			
198	12	Ilfracombe	2 0 0	4 0 0	8 to 9
560	6¼	Ilkestone	6 5 0	11 4 0	8 0 0
		Ilkley			
		Ilminster			
250	5	Ingatestone (Lim.)	5 0 0	1 10 0	
2800	10	*Ipswich*	10 0 0	10 0 0	16 5 0
1400	10	Do.	9 10 0	7 10 0	14 10 0
		Ironbridge			
180	10	Irthlingborough	10 0 0	7 0 0	10 0 0
800	30	*Isle of Thanet* (Margate & Ramsgate.)	39 0 0	10 0 0	60 0 0
		Jersey, St. Helier's			
		Kegworth			
363	5	Kelvedon (Lim.)	5 0 0		
1842	10	*Kendal United Gas and Water*	9 0 0	10 0 0	17 0 0
380	20	Do., preference	20 0 0	7 10 0	32 0 0
290	10	Kenilworth (Lim.	10 0 0	4 0 0	10 0 0
400	5	Keswick	5 0 0	5 0 0	4 0 0
228	25	Kettering	25 0 0	6 10 0	30 0 0
		Ketton (L.) Rutld.		7 0 0	
		Keynsham			
500	5	Kibworth	5 0 0	6 0 0	7 0 0
		Kidderminster		5 0 0	
800	5	Kidsgrove	5 0 0	12 0 0	7 10 0
150	10	Kimbolton	10 0 0	7 0 0	12 0 0
140	7	Kingsbridge	7 0 0		10 to 11
270	5	King's Cliffe	5 0 0	5 10 0	5 0 0
		Kingstn-on-Thame.			
		Kingswinford District (Limited)			
		Kington, Hereford			
400	5	Kinver, Staffordsh.	5 0 0		5 0 0
		Kirby Lonsdale			
		Kirkburton			
400	5	Kirkby Stephen (L)	5 0 0		
330	5	Kirkham, Lanc.	5 0 0	4 0 0	5 0 0
330	2½	Do., new shares	2 10 0	4 0 0	2 10 0
	5	Kirkhtn., Dalton, & Lepton(L.) £5000			
200	10	Kirton-in-Lindsey	10 0 0	5 0 0	10 10 0
200	5	Knighton (L.)	5 0 0		
1000	10	*Knottingley*			
670	5	Knutsford Gas and Water (Limited)	5 0 0	8 0 0	5 10 0
319	5	Do.,	33 0 0	8 0 0	3 10 0
	5	Lamborne (L)£1200			
		Lamptr., Llandssl., Tregrn. & Abera.			
30000	Sk.	*Lancaster*	All.	7 10 0	148 0 0
50	25	Langport	5 0 0	4 0 0	15 0 0
		Launceston			
		Lea Bridge (*see* County & Gen)			
1500	20	*Leamington Priors*	20 0 0	8 0 0	28 0 0
1500	20	Do., new shares	8 0 0	7 0 0	9 0 0
213	10	Leatherhead	10 0 0	5 0 0	10 0 0
		Ledbury			
		Leeds Company—			
190200	Sk.	Consolidated stk.	£100	6 0 0	113 to 114
6790	5	Do., new	1 0 0	6 0 0	1 12 6
		Leeds New Comp—			
45000		Old stock	£100	10 0 0	170 to 173
117500		New do.	£100	6 0 0	109 to 110
6500	5	Do., B shares	3 0 0	6 0 0	3 4 0
		Leeswood (Lim.)			
3900	13	*Leicester*	13 0 0	10 0 0	23 0 0
5000	10	Do., new shares	10 0 0	7 10 0	15 0 0
		Leigh £2000		7 0 0	
476½	21	Leighton Buzzard	21 0 0	8 0 0	30 0 0
500	10	Leominster	10 0 0	5 0 0	9 10 0
330	25	Lewes, A shares	25 0 0	8 0 0	31 5 0
644	5	Do., B shares	5 0 0		6 5 0
245	5	Leyburn, Yorksh.	5 0 0		6 0 0
		Leyland, Lancash.			
250	20	Lichfield	20 0 0	10 0 0	40 0 0
320	25	*Lincoln*	25 0 0	10 0 0	70 0 0
306	5	Lindfield(Limited)	5 0 0	8 0 0	5 0 0
240	5	Liskeard	5 0 0	7 10 0	6 0 0
		Littleborough			
240	5	Littlehampton	5 0 0	10 0 0	5 0 0
	5	Littleport(L) £2000			
	Sk.	*Liverpool United*	£100	10 0 0	208 0 0
	25	Do.	5 0 0	7 0 0	5 12 6
259	5	Llandovery (Lim.)	1 10 0	7 0 0	
1212	10	Llandudno Gas and Water (Lim.)	10 0 0	7 0 0	11 0 0
		Llanelly £3000			
		Llanfylin(L)£2000			
		Llangollen			
250	10	Llanrwst(Limited)	9 15 0	5 0 0	9 15 0
	5	Llantrisst.(L)£2000			
272	5	Loddon	5 0 0	3 0 0	5 0 0
		Long Buckby (L.)			
	5	Longrdg.L.£10,000			
120	10	Long Sutton(Lim.)	10 0 0	7 10 0	11 to 12
2000	10	*Longton*	10 0 0	6 0 0	14 0 0
1000	10	Do., new shares	2 0 0	6 0 0	2 5 0
		Longwood, near Huddersfield			
250	5	Lostwithiel	5 0 0	4 0 0	6 0 0
250	1	Do., new shares	1 0 0	5 0 0	1 10 0
1422	6	Loughborough	6 0 0	10 0 0	11 15 0
240	25	*Louth*	25 0 0	10 0 0	35 0 0
2500	10	*Lowestoft G. & W.*			
611	5	Ludlow Union	5 0 0	5 0 0	5 0 0
250	5	Do., pref. shares	5 0 0	5 0 0	
640	10	*Luton*	10 0 0	7 10 0 & Bns.	12 0 0
640	5	Do., preferential	5 0 0	4 0 0	5 0 0
640	5	Do., new shares	5 0 0	7 10 0 & Bns.	6 0 0
100	20	Lutterworth	20 0 0	6 5 0	25 0 0
	5	Lydd (Lim.) £2000			
		Lydney (L.) £3000			
63	20	Lyme Regis	20 0 0	4 0 0	20 0 0
120	25	Lymington	25 0 0	5 0 0	25 0 0
400	10	Lymm	9 0 0	6 0 0	10 0 0
300	10	Maidenhead	10 0 0	5 0 0	10 0 0
500	25	*Maidstone*, A sh.	25 0 0	10 0 0	45 0 0
500	25	Do., B shares	25 0 0	4 0 0	20 0 0
	25	Do., new shares	25 0 0	7 10 0	
204	23	Maldon	23 0 0	7 0 0	27 0 0
200	10	Malmesbury	10 0 0	2 10 0	5 15 0
		Malpas (Limited)			
825	10	Malton	10 0 0		
793	7	Do.	7 0 0		
		Malvern Link			
		Manningtree			
		Mansfield £5000		10 0 0	
150	10	Mansfield Woodhse	10 0 0		
		March (Thanet)			
		Margate (*see* I. of			
		Market Drayton			
132	25	Market Harboro'	25 0 0	7 0 0	35 0 0
		Market Weighton			
		Markyate St. (L.)			
		Marlborough			
150	10	Marsden (Lim.)	10 0 0	5 0 0	10 0 0
	5	Marlock (L.) £2000			
671	20	Maryport	14 0 0		14 5 0
600	5	Matlock (Lim)	5 0 0	6 0 0	
508	5	Matlock Bridge, Matlock Bank, & Matlk. Town (L.)	5 0 0	6 0 0	
200	2	Measham (Lim.)	1 12 6	5 0 0	
220	10	Melbourne	10 0 0	6 0 0	12 0 0
		Melksham			
934	2	Meltham	2 0 0	4 10 0	
		Melton Mowbray			
50	10	Mere	10 0 0		
330	35	Merthyr Tydvil	35 0 0	10 0 0	50 0 0
120	10	Middleham	1 0 0	5 0 0	10 0 0
		Middletn-in-Teesd.			
400	5	Midhurst (Lim.)	5 0 0	2 10 0	5 0 0
		Midsmmr. Norton.			
198	5	Mildenhall	5 0 0	5 0 0	
300	5	Milnthrpe(L)£1500	4 10 0	3 6 8	
184	10	Milverton (Lim.)	10 0 0	5 0 0	10 0 0
2000	5	*Mirfield*	5 0 0	5 0 0	6 5 0
		Miteham & Wimb.			
650	5	*Mold Gas & Water*	5 0 0	7 10 0	6¼ to 6½
700	10	Monmouth G. & W.	10 0 0	5 0 0	10 0 0
250	5	Montgomery (L.)	5 0 0		
150	10	Moreton-in-Marsh	9 2 6	4 0 0	9 2 6
1000	5	*Morley*, nr. Leeds	5 0 0	10 0 0	8 10 0
1000	2	Do.	2 0 0	10 0 0	3 8 0
220	16	Morpeth	16 0 0	5 0 0	17 10 0
		Mossley			
		Mottram			
	2	Narbrth (L.) £2000			
		Nayland			
		Neath			
		Neath New			
185	10	Needham Market	10 0 0	4 0 0	
		Nethrthng(L.)£700			
		Newark		10 0 0	
		Newburn			
250	20	Newbury	20 0 0	5 0 0	20 0 0
		Newcstle & Gatshd.			
		Nwcstle-un.-Lyne			
250	5	Newent	5 0 0		
		Newhaven, Sussex			
		New Malton			
600	5	Newmarket	5 0 0	4 0 0	4 0 0
366	2	Do., preference	2 0 0	6 0 0	2 0 0
		New Mill(L.)£7000			
200	20	*New Mills & Hayfield*	20 0 0	7 10 0	
70	20	Newnham (Lim.)	20 0 0	10 0 0	37 10 0
	5	Newport, Essex, (L.) £2000			
		Newport Pagnell			
360	35	*Newport, M.*, A sh.	35 0 0	9 0 0	50 0 0
540	35	Do., B shares	35 0 0	7 10 0	42 10 0
		Newport, Salop			
250	5	New Romney (Ld.)	5 0 0	5 0 0	5 0 0
		Newton Abbott			
198	10	Newtown, Mont.	10 0 0	6 0 0	10 0 0
		Northallerton			

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
777	20	*Northmptn.*, A sh.	20 0 0	10 0 0	34 0 0
777	20	Do., B shares.	20 0 0	4 0 0	13 0 0
777	20	Do., C shares.	20 0 0	7 10 0	25 0 0
2331	5⅜	Do.	3 13 4	7 10 0	4 5 0
		North Bierley			
		Northfleet (*see* Co. & General)			
		Northleach			
120	10½	North Walsham	10 10 0	5 0 0	10 15 0
371	15	Northwich	15 0 0	5 0 0	15 0 0
		Norwich (*see* Brit. Provincial)			
4600	50	*Nottingham*	50 0 0	5 10 0	60 0 0
	50	Do., new shares.	50 0 0	5 10 0	63 0 0
268	8	Nuneaton (Lim.).	8 0 0	5 0 0	7 10 0
125	8	Do., new shares.	8 0 0	5 0 0	7 10 0
		Oaken Gates, Salop			
240	5	Oakhampton (Lim.)	5 0 0		
200	10	Odiham	10 0 0	6 0 0	10 10 0
320	5	Old Goole (Lim.)	5 0 0	6 0 0	5 0 0
		Olney			
360	10	*Ormskirk*, old sh.	10 0 0	8 0 0	14 0 0
1080	10	Do., new shares.	4 10 0	8 0 0	6 4 6
2400	5	*Ossett & Horbury*	5 0 0	10 0 0	10 0 0
600	5	Do., new shares	2 0 0	10 0 0	5 5 0
		Oswestry			
		Otley, Yorkshire			
80	25	Oundle	25 0 0	7 0 0	25 0 0
600	15	*Over Drwen*, orig.	15 0 0	5 0 0	19 0 0
600	15	Do., A shares.	15 0 0	5 0 0	19 0 0
1200	15	Do., B shares.	7 10 0	5 0 0	10 0
1694	1	Over & Whrtn. (L)	1 0 0		1 2 0
320	5	Owston Ferry (L.)	5 0 0	5 0 0	5 0 0
120	150	*Oxford*	£150	9 0 0	290 to 300
1527	5	Padiham	5 0 0	6 0 0	6 0 0
338	2½	Painswick	2 10 0		2 10 0
		Pangbourne (L)			
		Pately Br., Yorksh.			
300	5	Peel, Isle of Man	5 0 0	7 0 0	6 to 7
		Pembroke (*see* Co. and General)			
500	20	*Peniston*			
250	20	Penrith	15 0 0	6 10 0	21 0 0
153	20	Penzance	20 0 0		15 0 0
		Pershore			
320	5	Petersfield	5 0 0	5 0 0	
300	10	Petworth	10 0 0	9 17 6	16 0 0
1250	2	Pewsey (Limited)	2 0 0	6 0 0	2 0 0
		Pickering			
2500	10	*Plymouth & Stuh.*	10 0 0	10 0 0	19 0 0
2500	10	Do., new shares.	10 0 0	7 10 0	14 0 0
2500	10	Do., new shares.	3 0 0	7 10 0	4 10 0
160	10	Pocklington	10 0 0		5 0 0
		Ponder's End & Enfield Highway (L.)			
		Pontefract			
		Pontypridd		4 0 0	
400	10	Poole	10 0 0	10 0 0	15 0 0
344	2	Do., new shares.	2 0 0	10 0 0	3 0 0
643	5	Port Madoc (Lim.)	5 0 0	5 0 0	
		Port Talbot			
		Portishead, £5000			
600	53	*Portsea Island*	53 0 0	8 0 0	60 0 0
600	50	Do., new shares.	50 0 0	8 0 0	57 0 0
600	50	Do., new shares.	49 0 0	8 0 0	56 0 0
9000	Sk.	Do.		5 0 0	92 0 0
120	10	Potton, Bedfordsh.	10 0 0	5 0 0	10 0 0
400	10	*Prescott*	10 0 0	5 0 0	
		Presteign			
120000	Sk.	*Preston*	All.	10 0 0	210 to 215
	5	Prittlewell (Lim.) £2000			
1000	10	Provincial (Hull)	8 0 0		8 0 0
600	20	*Pudsey*	20 0 0	7 10 0	30 0 0
600	6⅔	Do., new shares.	4 13 4	7 10 0	4 13 4
93	20	Pwllheli	20 0 0	2 10 0	25 0 0
600	5	Quorndon & Mountsorrel	5 0 0	7 0 0	12 0 0
900	10	*Radcliff & Pilkington*, No. 1	10 0 0		
2100	10	Do., No. 2	6 0 0		
200	20	Ramsay, I. of Man	20 0 0	6 10 0	23 0 0
		Ramsey, Hunts			
		Ramsgate (*see* I. of Thanet)			
		Rastrick			
		Rawmarsh			
20000	Sk.	*Reading*	100 0 0	8 0 0	120 5 0
5000	,,	Do.	100 0 0	5 0 0	100 10 0
1000	10	Do.	10 0 0	7 0 0	11 0 0
500	10	Do., preference	10 0 0	5 0 0	10 10 0
		Redbourn (L) £1100			
400	5	Redcar	5 0 0	4 0 0	5 0 0
1200	5	*Redhill*	5 0 0	7 0 0	6 0 0
		Redruth			
		Reigate			
1200	1	Repton (Limited)	1 0 0	5 0 0	1 1 0
2000	10	*Richmond*, Sry. (L)	10 0 0	7 0 0	15 0 0
		Risca & Pontymstr.			
600	5	Rhosllanerchrugog	3 0 0	7 10 0	5 0 0
		Rhymney (Lim.)			
400	5	Rickmansworth	5 0 0		5 0 0
180	10	Ringwood	10 0 0	5 0 0	10 0 0
		Ripley			
		Risborough			
		Robin Hood's Bay			
280	50	*Rochester & Chatham*		6 0 0	
		Rochford			
2600	5	Romford	5 0 0	6 0 0	5 5 0
220	10	Romsey	10 0 0	7 10 0	12 10 0
7500	Sk.	*Rotherham*, A stock.	100 0 0	10 0 0	186 to 190
2500	Sk.	Do., B stock.	100 0 0	8 0 0	152 to 154
600	20⅔	Do., new shares.	10 0 0	8 0 0	14¼ to 15
		Rothwell			
		Rowley Regis and Blacheath £4000			
350	10	Royston	10 0 0	5 0 0	9 10 0
150	20	Rugby	20 0 0	10 0 0	
150	5	Do., ¼ shares.	5 0 0	10 0 0	
150	6¾	Do., ⅓ shares.	6 13 4	10 0 0	
150	10	Do., new shares.	10 0 0	10 0 0	
150	2½	Do., do.	2 10 0	10 0 0	
150	3⅓	Do., do.	3 6 8	10 0 0	
430	10	Rugely	10 0 0	5 0 0	10 10 0
2400	5	*Runcorn*	5 0 0	7 10 0	
2400	5	Do., new shares.	3 5 0	7 10 0	
114	31½	Ruthin	31 5 0	6 16 0	40 0 0
1500	12½	*Ryde*	12 10 0	8 0 0	15 0 0
500	5	Rye	5 0 0	6 0 0	6 0 0
		Saddleworth			
225	20	Saffron Walden	20 0 0	5 0 0	20 0 0
225	20	Do.	10 0 0		
1400	5	St. Alban's Gas & Water (Lim.)	5 0 0	5 0 0	5 5 0
320	5	St. Asaph (Lim.)	5 0 0		
		St. Austell			
		St. Bees (Lim.)			
		St. Colomb			
3000	10	*St. Helen's*	10 0 0	10 0 0	20 0 0
1500	10	Do.	8 0 0		
		St. Ives, Cornwall			
		St. Mary's Cray			
320	5	Salcombe	5 0 0		
880	12½	*Salisbury*	12 10 0	10 0 0	17 10 0
160	12½	Do., preference	12 10 0	6 0 0	15 0 0
341	10	Sandbach	10 0 0	5 0 0	12 10 0
		Sandown (Lim.)			
381	10	Sandwich	10 0 0	5 0 0	
		Sandy, Beds			
	5	Sawston (L.) £2000			
100	10	Saxmundham	10 0 0	5 0 0	
2000	10	*Scarborough*	10 0 0	7 0 0	13 0 0
1000	10	Do.	6 0 0	7 0 0	12 2 6
240	5	Sedburgh	5 0 0		
300	16	Selby	16 0 0	7 10 0	
140	5	Settle (Limited)	3 10 0	5 0 0	
290	10	Sevenoaks	10 0 0	4 0 0	10 0 0
300	10	Shaftesbury (Lim.)	10 0 0	5 0 0	8¼ to 9
565	5	Sheepshed (Lim.)	5 0 0	6 0 0	6 0 0
135000	Sk.	*Sheffield United*, A stock.	100 0 0	10 0 0	199 to 201
129984	Sk.	Do., B stock.	100 0 0	10 0 0	199 to 200
2635	30	Dd., C shares.	20 0 0	10 0 0	47½ to 48
600	5	Shefford (Limited)	4 0 0		
		Shelton, Potteries (*see* Brit. Prov.)			
2900	5	Sheppy, Sheerness	5 0 0	10 0 0	7 0 0
800	5	Do., pref. sh.	5 0 0	4 0 0	4 0 0
400	5	Do., A shares.	2 0 0	10 0 0	3 0 0
350	10	Shepton Mallet	10 0 0	7 10 0	10 0 0
1200	5	Sherborne	5 0 0	5 0 0	5 0 0
		Shiffnal, Salop			
1000	5	*Shipley*	5 0 0	6 0 0	7 10 0
150	10	Shipston-on-Stour	10 0 0	4 0 0	
		Shirley & Freemantle, Hants			
240	25	Shotley Br. (Lim.)	25 0 0	7 0 0	26½ to 27
240	10	Do., new shares	10 0 0	7 0 0	
1000	10	*Shrewsbury*, A sh.	10 0 0	10 0 0	20 0 0
1000	10	Do., B shares.	10 0 0	5 0 0	10 0 0
1000	10	Do., new shares.	10 0 0	7 10 0	15 0 0
		Sible Hedingham			
	5	Sidmouth (L) £4000			
7000	Sk.	*Skipton*	100 0 0	9 0 0	150 0 0
400	2½	Do., new shares.	2 10 0	5 0 0	3 0 0
		Slaithwaite			
250	20	Sleaford	20 0 0	5 0 0	20 0 0
250	10	*Slough*	10 0 0		
340	5	Snaith	5 0 0		4 0 0
		Soham			
	5	Somersham (L) £1500			
150	10	Somerton	10 0 0		
354	5	Southam	5 0 0		
1000	50	*Southampton*	50 0 0	10 0 0	
		Southborough			
		Southend, Essex			
		Southgate & Col. H.			
220	10	South Molton	10 0 0	5 10 0	7 10 0
		South Petherton (L)			
2000	10	*South Shields*	10 0 0	9 0 0	15 to 17
248	10	Southwell (Lim.)	10 0 0	5 0 0	11 to 11¼
300	5	Southwold	5 0 0	5 0 0	5 0 0
1470	1	Spennymoor (Lim.)	1 0 0		
400	5	Spilsby	5 0 0		
		Spittal, Berwick-on-Tweed			
2000	6⅔	*Stafford*	6 13 4	10 0 0	10 0 0
2000	6⅔	Do., new shares.	4 0 0	8 0 0	5 0 0
178	5	Staindrop	5 0 0	6 0 0	5 0 0
248	25	Staines & Egham	25 0 0	6 0 0	26 to 27
		Staithes £1500			
		Staley Bridge		10 0 0	
225	50	*Stamford & St. Martin's*	50 0 0	9 0 0	75 0 0
	5	Staplehrst. (L) £2000			
150	10	Staveley (Limited)	10 0 0	5 0 0	11 10 0
300	5	Stevenage	5 0 0	5 0 0	5 0 0
2500	10	*Stoke, Fenton &*	10 0 0	10 0 0	
500	10	Do., [*Longton*	2 0 0	10 0 0	
400	5	Stone, Stafford	5 0 0	5 0 0	6 0 0
220	10	Stoney Stratford	10 0 0	4 10 0	9 0 0
		Storrngtn (L) £1000			
		Stourbridge, £5000			
1100	1	Stow-on-the-Wold	1 0 0	5 0 0	1 0 0
150	20	*Stratford-on-Avon*	20 0 0	10 0 0	40 0 0
150	5	Do., new shares.	5 0 0	10 0 0	10 0 0
375	8	Do., preference	8 0 0	5 10 0	8 10 0
750	5	*Stretford*	5 0 0	9 0 0	5 0 0
		Stroud			
261	20	Sudbury	20 0 0	6 10 0	21 10 0
		Sunbury (L), Mid.			
18120	5	*Sunderland*	5 0 0	9 0 0	8 15 0
20000	5	Do., new shares.	5 0 0	8 10 0	8 5 0
200	10	Sutton Coldfield (L)	10 0 0		10 0 0
400	10	Sutton-in-Ashfield	10 0 0	7 10 0	14 10 0
		Sutton Southcoates & Drypool, Hull	20 0 0		23 to 24
		Sutton, Surrey			
		Sutton Valence			
600	5	Swadlincote	5 0 0	5 0 0	6 0 0
169	10	Swaffham	10 0 0	5 0 0	7 0 0
	5	Swanage (L.) £2500			
240	25	*Swansea*	25 0 0	10 0 0	45 to 47
1280	25	Do., new shares.	25 0 0	7 10 0	35 0 0
		Swindon			
		Swindon New (L.)			
200	10	Swineshead (Lim.)	10 0 0	5 0 0	10 5 0
1000	5	Swinton & Mexboro'	5 0 0	7 0 0	7 0 0
180	10	Syston	10 0 0		10 0 0
276	5	Tadcaster	5 0 0	5 0 0	3 0 0
		Tamworth			
		Taporley (Lim.)			
		Tattershall & Coningsby (Lim.)			
2800	5	*Taunton*	5 0 0	6 0 0	6 0 0
2800	1¼	Do., new shares.	1 10 0	6 0 0	
800	6¼	Tavistock	3 3 9	6 0 0	5 10 0
200	5	Tenbury Union	5 0 0	5 0 0	5¼ to 6
150	10	Tenterden	10 0 0	4 0 0	8 0 0
181	10	Tetbury, Gloster	9 0 0	11 0 0	18 0 0
		Tewkesbury			
200	10	Thame	10 0 0	5 0 0	10 0 0
250	10	Thetford	10 0 0	6 0 0	10 to 11
150	10	Thornbury (Lim.)	10 0 0	4 0 0	
80	1	Do., new shares.	1 0 0	4 0 0	
356	5	Thorne	5 0 0		4 0 0
160	10	Thrapston (Lim.)	10 0 0	5 0 0	10 0 0
		Tideswell (L.) £2000			
1885	5	Todmorden (Lim.)	5 0 0	7 10 0	7 10 0
1870	5	Do., B shares.	3 0 0	7 10 0	4 10 0
600	2½	Topsham (Lim.)	2 10 0	5 0 0	
		Torpoint (Lim.)			
		Torquay			
		Torrington, Devon			
		Totnes			
		Totnes Consumers			
5000	5	*Tottenham & Edmonton*	5 0 0	8 0 0	6 0 0
150	10	Towcester	10 0 0	5 0 0	10 0 0
		Town-Malling			
300	5	Towyn (L) Merion.	5 0 0		5 0 0
275	10	Tring	10 0 0	5 0 0	10 0 0
		Trowbridge (*see*			
320	25	Truro [Brit. P.)	25 0 0	10 0 0	
320	5	Do., new	5 0 0	10 0 0	
		Tunbridge			
2000	10	*Tunbridge Wells*	10 0 0	10 0 0	19 0 0
100	10	Tuxford	10 0 0	5 0 0	12 0 0
		Twyford (Limited)			
34570	Sk.	*Tynemouth*	All.	10 0 0	130 0 0
		Ulverston			
		Uppingham			
240	5	Upton-on-Severn	5 0 0	5 0 0	5 0 0
	5	Upwell & Outwell (L.) £2500			
400	5	Usk (Limited)	5 0 0	7 10 0	6 12 6
300	10	Uttoxeter	10 0 0	5 0 0	12 10 0
		Uxbridge & Hill.			
1500	20	*Ventnor*	10 0 0		
160	10	Wainfleet (Lim.)	10 0 0		8 0 0
1000	25	*Wakefield*	25 0 0	10 0 0	44 0 0
3660	5	Do.	5 0 0	10 0 0	8 16 0
1732	5	Do., new shares.	5 0 0	7 10 0	6 15 0
400	5	Walker & St. Anthony (L.)	5 0 0		7¾ to 8¼
		Walker & Wall. Un.			
300	10	Wallingford	10 0 0	5 0 0	8 0 0
		Walton-on-Thame, (*see* Co. & Gen.)			
200	10	Wantage	9 0 0	5 0 0	10 10 0
		Ware (*see* C. & G).			
100	10	Wareham	10 0 0	3 10 0	8 0 0
2000	1	Warkwth & Amble	1 0 0	3 10 0	
200	25	Warminster	25 0 0	6 0 0	28 0 0
900	20	*Warrington*	20 0 0	10 0 0	37 0 0
900	20	Do., new shares.	15 0 0	10 0 0	27 0 0
		Warth			
		Warwick. £15,000		6 0 0	
		Watchet & W. £2500			
	2	Waterbch (L) £2000			
		Watford			
400	10	Weedon (Limited	10 0 0	6 10 0	12 10 0
400	3	Do., new shares.	1 10 0	6 10 0	1 17 6
111	25	Welchpool, Montg.	25 0 0	5 0 0	25 0 0
200	25	Wellingborough	25 0 0	5 0 0	25 0 0
450	10	Wellington, Salop.	10 0 0	7 10 0	12 10 0
100	30	Wellington, Som.	30 0 0	6 0 0	30 0 0
160	25	*Wells*, Somerset.	25 0 0	10 0 0	
		Wem (Lim.) £2000			
		W. Auckld. & St. Helen's, Auckld (L)			
160	10	Westbury	10 0 0		
		West Cowes			
225	10	Westerham (Lim.)	10 0 0	5 0 0	11 0 0
		West Kent			
454	5	W. Malling G. & W	5 0 0	3 0 0	4 10 0
200	20	*Weston-s.-M* A sh.	20 0 0	10 0 0	30 0 0
200	20	Do., B shares.	20 0 0	7 10 0	20 0 0
800	20	Do., C shares.	11 0 0	7 10 0	
200	5	Wetherby	5 0 0		1 10 0
2000	10	*Weymouth Cons.*			
		Whaley Bridge			
2300	1	Whitchurch, Hants	0 10 0	5 0 0	
400	25	Whitehaven	25 0 0	2 0 0	14½ to 15
		Whitehaven New			
		Whitstable			
		Whittington			
250	10	Whittlesea	10 0 0	5 0 0	11 0 0
300	10	Whitwick & Coalville	10 0 0		10 0 0
1200	5	*Whitworth Vale*	5 0 0	4 0 0	7 0 0
1200	5	Do., new shares.	4 7 6	4 0 0	6 7 6
	5	Wickm. M. L. £1000			
		Widnes Gas & Wtr.			
1250	10	*Wigan*	10 0 0	10 0 0	20 0 0
1250	10	Do., preference	10 0 0	5 0 0	10 0 0
2500	10	Do., new shares.	5 0 0	7 10 0	8 15 0

No. of Shares issued.	Amount per Share	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
400	5	Wigston	5 0 0	6 0 0	5 0 0
		Wigton, Cumberd.			
1020	5	*Willenhall*,			
		A shares.	5 0 0		
1020	5*s.*	Do., B shares.	2 14 0	5 0 0	
		Do., new shares.			
		Wilton			
240	10	Wimborne Minster	10 0 0		
130	10	Wincanton	10 0 0	7 0 0	
		Wincheombe £1500			
		Winchester G. & W.			
		Windermere Dist.			
1200	20	*Windsor (Lim.)*	20 0 0	7 0 0	25 0 0
1200	8	Do., pref. shares.	8 0 0	5 0 0	8 0 0
141	10	Winslow	10 0 0	6 0 0	10 0 0
120	10	Winterton (Lim.)	10 0 0	5 0 0	
120	5	Do., new shares.	5 0 0	5 0 0	
200	10	Wirksworth	10 0 0	5 0 0	10 0 0
		Wisbeach			
		Witham			
		Witney			
400	5	Wivelisscombe (L.)	5 0 0	6 0 0	5 5 0
		Wivenhoe (L) £2000			
200	10	Woburn	10 0 0	5 0 0	11 0 0
		Woking			
210	10	Wokingham	10 0 0	5 0 0	
4448	10	*Wolverhampton*	10 0 0	10 0 0	18 10 0
4448	10	Do., new shares.	8 10 0	10 0 0	16 0 0
550	10	Woodbridge (Lim.)	10 0 0	8 0 0	
660	2½	Woodstock	2 10 0	5 0 0	
		Woodhouses			
200	7	Wooler	7 0 0		
		Woolton			
2400	5	*Woolwich Consrs.*	5 0 0	10 0 0	8 0 0
2400	5	Do., do.	5 0 0	7 10 0	7 0 0
4800	5	Do., do.	3 0 0	7 10 0	4 0 0
		Woolwh. Equitable			
		Wootton Bassett			
2400	10	*Worcester*	10 0 0	10 0 0	20 0 0
		Workington			
600	10	*Worksop*	10 0 0	8 0 0	
600	5	Do., new shares.	5 0 0	7 0 0	
245	50	Worthing	50 0 0	4 0 0	40 0 0
		Worsboroughdale & Worsboro.			
270	12	Wotton-un.-Edge	12 0 0	4 0 0	40 0 0
1800	5	Wrexham	5 0 0	10 0 0	9 0 0
600	5	Do., new shares.	2 0 0	10 0 0	4 0 0
		Writtle			
		Wye, Kent			
		Wylam			
400	5	Wymondham	5 0 0	6 10 0	5 0 0
		Yarmouth, I. of W.			
800	30	*Yarmouth, Norfk.*	30 0 0	7 10 0	
800	7½	Do., ¼ shares	7 10 0	7 10 0	
1675	4	Yeadon & Guiseley	4 0 0	5 0 0	4 8 0
1675	2	Do., new shares.	0 5 0	5 0 0	0 5 6
140	30	Yeovil	30 0 0	6 0 0	30 0 0
140	10	Do., new shares.	10 0 0	6 0 0	10 0 0
		York Town			
15000	10	*York United*	5 0 0	10 0 0	10 15 0
		Yoxford			
	5	Ystalyfera L. £4000			
		SCOTLAND.			
26000	2½	Aberdeen	2 10 0	10 0 0	5 1 0
		Abernethy			
		Aberlour (L.) £650.			
500	10	Airdrie	10 0 0	9 0 0	14 10 0
		Alloa			
		Alva, nr. Stirling			
		Alyth			
600	7	Annan	7 0 0	6 0 0	7 0 0
1600	1	Anstruther & Cellardyke	1 0 0	8 0 0	1 6 0
825	20	Arbroath	20 0 0	7 10 0	30 0 0
100	20	Ardrossan	20 0 0	5 0 0	20 0 0
658	1	Auchinleck	1 0 0		
381	5	Auchterarder	5 0 0	7 10 0	7 10 0
750	2	Auchtermuchty	2 0 0	6 0 0	2 10 0
2932	5	Ayr	5 0 0	6 0 0	5 16 0
4250	2	Ayr & Newton Cons.	2 0 0	6 0 0	2 2 0
300	10	Banff	10 0 0	6 0 0	11 0 0
2158	1	Barrhead	1 0 0	7 10 0	1 0 0
200	5	Bathgate	5 0 0	5 0 0	5 0 0
		Beith			
976	1	Bervie	1 0 0	5 0 0	
		Biggar			
739	5	Blairgowrie	5 0 0	8 0 0	7 0 0
		Blantyre (Lim.)			
400	6	Borrowstowness	6 0 0	5 0 0	6 0 0
540	5	Brechin	5 0 0	10 0 0	11 10 0
		Bridge of Allan			
8350	2	Broughty Ferry	2 0 0	6 0 0	2 4 6
		Callender			
		Campbelton			
250	4	Carluke, Lanark	4 0 0	7 10 0	4 0 0
178	5	Castle Douglas	5 0 0	5 0 0	5 0 0
2330	3	Coatbridge	3 0 0	10 0 0	5 0 0
200	5	Coldstream	5 0 0	6 0 0	5 0 0
		Collinsburgh			
1000	1	Comrie	1 14 8	4 10 0	1 14 8
		Corstorphine			
1200	1	Crail, Fife	1 0 0	5 0 0	1 0 0
2744	1	Crieff	1 0 0	10 0 0	1 15 0
600	1	Cullen	1 0 0	5 0 0	0 15 0
280	2½	Cumbernauld	2 10 0	5 0 0	2 10 0
200	5	Cumnock	5 0 0	6 0 0	6 0 0
600	5	Cupar Angus	5 0 0	7 0 0	6 10 0
250	10	Cupar Fife	10 0 0	10 0 0	18 10 0
300	10	Dalkeith	10 0 0	10 0 0	20 0 0
		Deanston			
750	2	Denny	2 0 0	6 5 0	2 5 0
		Denny Consumers			
	5	Dornoch			
500	1	Douglas	1 0 0	6 0 0	1 2 0
		Dufftown			
		Dumbarton			
400	20	Dumfries	14 0 0	7 2 10	14 10 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
391	5	Dunbar	5 0 0	6 0 0	5 10 0
		Dunblane			
1250	23¾	*Dundee*	23 15 0	8 15 9	54 0 0
8000	5	*Dundee, New.*	5 0 0	5 0 0	5 15 0
860	10	Dunfermline	10 0 0	10 0 0	16 10 0
		Dunkeld			
1750	2	Duncon	2 0 0	6 0 0	2 3 0
		Dunse			
250	5	Dysart	5 0 0	7 10 0	6 10 0
2327	1	East Wemyss	1 0 0	6 0 0	1 2 0
750	1	Ecclefechan	1 0 0		
6000	25	*Edinburgh*	25 0 0	10 0 0	49 0 0
6000	25	*Edinburgh & Leith*	20 0 0	5 10 0	23 0 0
621	12	Elgin	12 0 0	6 0 0	13 0 0
1300	1	Elie & Earlsferry	1 0 0	7 5 0	1 3 0
		Ellon			
		Errol			
		Eyemouth			
	14	Falkirk	14 0 0	7 0 0	14 0 0
		Falkirk, New			
632	2	Falkland	2 0 0	5 0 0	2 0 0
		Fettercairn			
2000	1	Ferry Porton Craig	1 0 0	6 5 0	1 3 0
581	1	Fochabers	1 0 0	5 0 0	1 2 0
1440	5	Forfar	5 0 0	7 10 0	7 12 6
360	5	Do., new shares.	2 10 0	7 10 0	6 10 0
		Fort William			
2000	1	Fraserburgh	0 16 0	5 0 0	0 18 0
800	5	Galashiels	5 0 0	10 0 0	9 0 0
		Gatehouse, n. Fleet			
900	2½	Girvan	2 10 0	6 0 0	2 10 0
5200	25	*Glasgow*	25 0 0	10 0 0	50 0 0
3200	6¼	Do., ¼ shares	6 5 0	10 0 0	12 10 0
1000	25	Do., new shares.	25 0 0	7 10 0	38 0 0
5000	10	*Glasgow City and Suburban*	10 0 0	10 0 0	20 0 0
5000	10	Do., new shares.	10 0 0	7 10 0	15 0 0
		Grahamston			
190	10	Grangemouth	10 0 0	5 0 0	10 0 0
400	8½	Haddington	8 5 0	7 10 0	11 10 0
		Hamilton			
	5	*Hamilton, New.*	5 0 0	4 10 0	6 0 0
1460	5	Hawick	5 0 0	7 10 0	8 2 6
300	5	Helensburgh	5 0 0	7 10 0	7 10 0
2000	2	Holywood (Lim.)	2 0 0	7 10 0	3 0 0
1312	1	Huntly	1 0 0	7 10 0	1 5 0
250	5	Inverary	5 0 0	10 0 0	6 12 6
425	1	Inverkeithing	1 0 0	5 0 0	1 0 0
1200	10	*Inverness G. & Wr.*	10 0 0	7 10 0	13 0 0
2400	5	Do., new shares.	5 0 0	7 10 0	6 10 0
		Inverury			
	10	Irvine	10 0 0	10 0 0	14 0 0
	2½	Do.	2 10 0	10 0 0	3 12 6
300	5	Jedburgh	5 0 0	7 10 0	7 10 0
		Johnstone, Paisley			
		Kirkcaldy			
1300	1	Keith	1 0 0	5 0 0	0 11 0
600	5	Kelso	5 0 0	10 0 0	11 0 0
620	2	Kelsyth	2 0 0	5 0 0	2 0 0
950	1	Kennoway	1 0 0	5 0 0	1 1 0
1515	1	Kettle Freuchie, &c.	1 0 0	5 0 0	5 0 0
600	25	Kilmarnock	25 0 0	7 10 0	30 0 0
600	25	Do., new shares.	7 10 0	7 10 0	
334	5	Kincardine	5 0 0	5 0 0	4 10 0
		Kinghorn			
		Kingskettle, Fife			
		Kinross			
1200	5	Kirkcaldy	5 0 0	10 0 0	10 10 0
320	5	Kircudbright	5 0 0	5 0 0	5 0 0
997	3	Kirkintulloch	3 0 0	6 13 4	3 7 0
		Kirkwall			
		Kirriemuir			
		Lanark			
3500	1	Lanark Conrs. (L)	1 0 0	7 10 0	1 2 6
		Largo, near Leven			
280	8	Largs	8 0 0	7 10 0	8 10 0
1309	1	Lasswade	1 0 0		
177	5	Lauder	5 0 0	5 0 0	5 0 0
2000	1	Leslie, Fife	1 0 0	7 10 0	1 5 0
618	1	Lesmahago	1 0 0	6 0 0	1 0 0
		Leuchars			
906	5	Leven	5 0 0	10 0 0	7 0 0
100	10	Linlithgow	10 0 0	10 0 0	19 0 0
		Linton			
		Lochee, n. Dundee			
434	5	Lochgilphead (Ld.)	5 0 0	7 0 0	5 10 0
380	5	Lochwinnoch	5 0 0	3 10 0	4 0 0
		Macduff			
1200	1	Markinch, Paisley	1 0 0	8 0 0	1 5 0
		Maryhill, n. Glasg.			
282	3	Mauchline	3 0 0	5 0 0	3 0 0
667	5	Maxwll T. & Dumf.	5 0 0	5 0 0	3 to 3¼
423	5	Maybole, Ayrshire	5 0 0	4 10 0	5 0 0
		Meigle (L.) £700			
373	2	Melrose	2 0 0	7 10 0	2 10 0
718	2	Mid & East Calder	2 0 0		2 0 0
200	5	Moffat	5 0 0	5 0 0	
120	2½	Do., new shares.	2 10 0	5 0 0	
400	20	Montrose	20 0 0	10 0 0	35 0 0
		Muirkirk (L.) £1000			
1000	5	Musselburgh	5 0 0	8 0 0	9 9 0
618	1	Nairn	1 0 0	5 0 0	1 0 0
		Neilston, n. Glasg.			
300	5	Newburgh, Fife	5 0 0	8 0 0	7 0 0
300	1	Do., new shares.	1 0 0	8 0 0	
1200	1	Newmilns	1 0 0	7 10 0	1 2 0
		Newport, n. Dundee			
1300	1	Newport, Fife	1 0 0	5 0 0	1 0 0
		Newton-on-Ayre			
107	14½	Newton Stewart	14 10 0	5 0 0	14 10 0
300	5	N. Berwick, N.B.	5 0 0	5 0 0	7 10 0
		N. Queensferry			
245	5	Oban	5 0 0	7 10 0	5 7 6
1000	5	Peebles	5 0 0	6 0 0	5 0 0
3000	2½	Do., new shares.	2 10 0	6 0 0	2 10 0
1000	25	Perth	25 0 0	5 0 0	25 0 0
3000	5	Perth, New	5 0 0		0 3 0
		Peterhead			
2000	1	Pettenween	1 0 0	6 0 0	1 1 0
2416	1	Pollokshaws	1 0 0	7 10 0	1 5 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
		Port Glasgow			
		Portobello			
		Portsoy			
200	5	Prestonpans	5 0 0	6 0 0	
1594	1	Renton, Dumbrtn.	1 0 0	7 10 0	1 1 6
		Rothes			
1500	1½	Rutherglen	1 6 8	5 0 0	1 6 8
250	12	St. Andrew's	12 0 0	8 6 8	16 10 0
193	12	Do., new shares.	12 0 0	8 6 8	16 10 0
400	5	Saltcoats	5 0 0	7 10 0	6 0 0
936	1	Sanquhar	1 0 0	5 0 0	0 15 0
80	1	Do., preference.	1 0 0	5 0 0	
507	5	Selkirk	5 0 0	10 0 0	10 0 0
508	1	South Queensferry	1 0 0	5 0 0	1 0 0
200	5	Stewarton	5 0 0	10 0 0	6 to 6½
7450	2	Stirling	2 0 0	8 0 0	3 5 0
2500	1	Stonehaven	1 0 0	6 5 0	1 5 0
1110	1	Stonehouse	1 0 0	7 10 0	13s. to 15s.
600	2½	Stornoway	2 10 0	8 0 0	3 10 0
		Stow (Limited)			
500	5	Stranraer	5 0 0	10 0 0	6 13 6
588	2	Strathaven	2 0 0	8 0 0	3 0 0
643	2½	Thurso	2 10 0		2 10 0
		Tillicoultry			
		Turriff			
800	1	Tranent	1 0 0	5 0 0	1 0 0
		Troon			
		Tullibody			
2051	1	Wemyss & Bkhn.	1 0 0	6 0 0	1 0 0
		Wick			
665	5	Wigtown	5 0 0		
		IRELAND.			
1800	1	Antrim (Limited)	1 0 0		1 0 0
		Ardee			
300	10	Armagh (Lim.)	10 0 0	10 0 0	20 2 6
500	5	Athy (Limited)	4 0 0	6 0 0	5 0 0
		Balbriggan £1400.			
		Ballycastle			
900	7½	Ballymena & Harryville (L.)	7 10 0	5 0 0	7 10 0
184	10	Ballymoney	10 0 0	5 0 0	10 0 0
220	5	Ballynahinch (Ld.)	5 0 0	5 0 0	5 0 0
		Ballyshannon £2000			
		Bangor, Down			
5250	20	*Belfast*	20 0 0	10 0 0	39 0 0
2450	20	Do., new shares.	20 0 0	10 0 0	35 to 37
		Boyle (Limited)			
1047	5	Carlow	5 0 0	5 0 0	5 0 0
600	5	Carrickfergus (Ld.)	5 0 0	8 0 0	6 5 0
197	10	Carrickmacross (L.)	10 0 0	5 0 0	10 0 0
300	10	Carrick-on-Suir	10 0 0	6 0 0	10 0 0
228	10	Castleblaney (Ld.)	10 0 0	5 0 0	10 0 0
		Castlederg			
400	5	Cavan (Limited)	5 0 0		5 0 0
		Clones (L.) £2000			
2000	5	Clonmel Consmrs.	5 0 0	6 0 0	5 10 0
240	5	Comber (Limited)	5 0 0	5 0 0	5 0 0
500	5	Cookstown	5 0 0	5 0 0	
		Coote Hill			
12000	5	Cork Conrs. (Lim.)	5 0 0	8 0 0	7 15 0
6000	5	Do., new shares.	4 0 0	8 0 0	6 10 0
		Donaghadee £2000			
608	11	Drogheda	11 0 0	7 0 0	14 10 0
420	5½	Do., new shares.	5 10 0	7 0 0	7 5 0
19000	10	*Dublin Alliance*	8 0 0	8 15 0	11 10 0
440	25	Dundalk (Limited)	25 0 0	8 0 0	25 0 0
600	5	Dungannon	5 0 0	5 0 0	6 0 0
871	5	*Downpatrick*	5 0 0	4 0 0	4 0 0
249	10	Ennis (Limited)	10 0 0		11 0 0
240	25	Galway	25 0 0	10 0 0	35 0 0
		Gorey (L.) £2600			
		Holywood (Lim.)			
	10	Howth (L.) £3500			
		Keady			
600	5	Kells (L.) Meath	5 0 0	6 0 0	5 0 0
600	10	Kilkenny (Limited)	10 0 0	9 0 0	12 10 0
		Killarney (L.) £3000			
		Kilrush			
		Kinsale (L.) £2000			
210	10	Larne (Limited)	10 0 0	5 0 0	10 0 0
150	10	Letterkenny (Ld.)	10 0 0	6 0 0	11 0 0
		Limerick (see United Gen.)			
500	10	Lisburn (Limited)	10 0 0	10 0 0	15 0 0
300	5	Lismore	5 0 0	3 0 0	
100	5	Do., preference.	3 0 0	5 0 0	
600	15	Londonderry	15 0 0	6 13 4	21 0 0
		Longford			
540	10	Lurgan	8 0 0	6 0 0	9 0 0
		Mallow			
2191	1	Maryborough (Ld.)	0 5 0		0 5 0
		Midleton			
770	5	Monaghan (Lim.)	5 0 0	4 10 0	5 16 0
2000	10	Navan	5 0 0	6 0 0	4 0 0
		Nenagh			
1400	5	Newry Conrs. (L.)	5 0 0	10 0 0	8 3 0
450	5	Newtownards	5 0 0	7 0 0	6 5 0
200	10	Newtownlimavady	10 0 0	5 0 0	10 0 0
		Omagh	5 0 0	7 10 0	6 0 0
250	20	Portadown	20 0 0	5 0 0	20 0 0
125	20	Portaferry			
500	10	Queenstown	10 0 0	6 0 0	10 0 0
200	10	Do., new shares.	5 0 0	6 0 0	5 0 0
		Roscommon £2500.			
	5	Roscrea (L.) £2500.			
		Saintfield (L.) £1000			
	5	Skibbern. (L.) £3000			
600	10	Sligo	10 0 0	8 0 0	12 10 0
600	5	Do., new shares.	5 0 0	8 0 0	6 5 0
		Tandragee (Lim.).			
	5	Thuries (L.) £2500			
		Tuam (L.) £3000			
540	5	Tullamore	5 0 0	6 0 0	5 0 0
240	5	Tullow	5 0 0	6 0 0	5 0 0
		Warrenpoint £3000			
1600	10	*Waterford*	10 0 0	6 0 0	12 0 0
1200	5	Wexford Consmrs.	5 0 0	10 0 0	8 0 0
300	10	Wicklow (Lim.)	10 0 0	6 0 0	10 0 0

GAS-WORKS BELONGING TO PRIVATE INDIVIDUALS.

Those marked * by the purchase of the shares in extinct companies.

Alford.
Ballina.
Beaufort (Brecon).
Beaumaris.
Berkeley.
Billericay.
Bodmin.
Broadbottom.
Bungay.
Burntisland.
Chapel-en-le-Frith.
Chard.
Chichester.
Clare, Suffolk.
Crewe.
Dingwall.
Eccleshill, near Leeds.
Ellesmere.
Enniscorthy.
Farsley.
Fermoy.
Ferry Hill.
Goole.
Hadleigh.
Halstead.
Harleston.
Harrow-on-the-Hayle.
Holt.
Hunmanby.
King's Langley.
Leiston (Suffolk).
Lynn.
Market Deeping.
Milnrow, nr. Manchester.
Mold Green, nr. Huddersfield.
Mullingar*.
Nantwich*.
Nettlebed.
Newport (I. of W.)
New Ross.
Oakham*.
Parsonstown.
Penryn.
Peterborough.
Pontypool.
Redditch.
Ripon.
Ross.
Rhyl.
St. Blazey (Cornwall).
St. Ives* (Hunts).
St. Neots*.
Seaham.
Sittingbourne.
Southall, Midlsex.
Stokesley.
Stowmarket.
Thirsk.
Tipperary.
Tiverton*.
Waltham Abbey.
Wem.
Whitby*.
Whitchurch (Salop).

GAS-WORKS BELONGING TO LOCAL BOARDS, MUNICIPAL CORPORATIONS, OR COMMISSIONERS,

Acting under special Acts of Parliament.

Abergavenny.
Athlone.
Ballinasloe.
Bethesda, Bangor.
Beverley.
Bingley.
Birkenhead.
Blackpool, & Layton with Warbk.
Bollington (Ches.).
Brighouse.
Burnley.
Burton-on-Trent.
Bury (Lanc.).
Carlisle.
Cashel.
Coleraine.
Dalton.
Darlington.
Devizes.
Doncaster.
Enniskillen.
Great Malvern.
Greenock.
Halifax.
Haverfordwest.
Keighley.
Knaresborough.
Leek.
Limerick Corporation Works.
Lytham (Lanc.).
Macclesfield.
Manchester.
Middlesborough.
Middleton.
Milton (Kent).
Nelson, n. Burnley.
Newton (Lanc.)
Oldham.
Paisley.
Renfrew.
Richmond (Yorks.)
Ripon.
Rochdale.
Rothesay.
Salford.
Southport.
Sowerby Bridge.
Spalding.
Stockport.
Stockton-on-Tees.
Strabane.
Teignmouth.
Tenby.
Tralee.
Trim (Meath).
Tyldesley & Shakerley.
Wallasey.
Walsall.
Wells (Norfolk)
Workington.
Youghall.

Share List of Water Companies.

See "Share List of Gas Companies" for Gas and Water Companies.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
			£ s d	£ s d	£ s d
		Airdrie and Coatbridge			
588	1	Alexandria, Dumbartonshire	1 0 0		0 2 6
800	25	Ayr	25 0 0	5 0 0	25 0 0
1460	10	Banbury	10 0 0	3 10 0	9 0 0
		Belper			
9600	25	Birmingham	25 0 0	6 10 0	34 0 0
9600	17½	Do., new shares	3 0 0	6 10 0	
6000	10	Blackburn	10 0 0		
		Boston			
		Bridge of Earn (L) £450			
		Brighton, Hove, and Preston			
8000	25	Bristol	25 0 0	3 2 0	20 to 21
8000	12½	Do., preference	12 10 0	5 0 0	13 2 6
		Broadstairs		4 0 0	
		Brompton and Gillingham			
5000	10	Bury and Radcliffe	10 0 0	2 0 0	10 0 0
1333	15	Do., pref. shares	15 0 0	10 0 0	31 15 0
1333	18	Do., do.	6 0 0	10 0 0	14 0 0
2000	10	Do., do.	5 0 0	4 0 0	5 0 0
2000	10	Do., do.	1 0 0	4 0 0	5 0 0
3250	10	Cambridge	10 0 0	7 0 0	16 0 0
3250	3	Do.	3 0 0	7 0 0	4 16 0
	Sk.	Cardiff	100 0 0	5 15 0	115 0 0
1500	10	Do.	8 0 0	5 15 0	9 0 0
	10	Charlemb. L. £3000			
55625	Sk.	Cheltenham	100 0 0	5 5 0	120 0 0
687½	25	Do., pref. shares	25 0 0	4 10 0	25 0 0
		Chepstow			
		Chester			
2485	2	Clay Cross	2 0 0	8 0 0	2 16 0
		Colchester			
175	20	Colne, Lancashire	20 0 0	5 0 0	28 0 0
	5	Consett District	4 0 0		4¾ to 4¾
		Dartford			
1250	20	Darwen	20 0 0	2 10 0	19 to 19½
1400	5	Deal	5 0 0	7 0 0	6 0 0
1571	25	Derby	25 0 0	10 0 0	53 10 0
400	50	Dudley	50 0 0	1 0 0	20 0 0
250	25	Do., pref. shares	25 0 0	4 10 0	
		Dukinfield			
9500	10	Dundee	10 0 0	7 10 0	15 0 0
5100	10	Do.	10 0 0	6 10 0	13 10 0
2670	5	Dunfermline	5 0 0	2 0 0	2 10 0
	5	Durham	5 0 0		7¼ to 7½
		East Barnet Gas and Water			
7360	25	Edinburgh	25 0 0	5 0 0	28 0 0
7360	12½	Do., new shares	12 10 0	5 10 0	16 0 0
7218	6½	Do., do. ½ shares	6 5 0	5 0 0	7 0 0
5581	6½	Do., do. do.	2 10 0	5 0 0	2 15 0
2000	25	Exeter	25 0 0	6 10 0	42 0 0
		Falmouth			
	2	Fenny Com. L. £600			
		Folkestone			
		Gosport			
	20	Gravesend and Milton	20 0 0	3 0 0	14 to 16
		Great Grimsby (L)			
1000	5	Greenock (Shaw's Gravitation)	50 0 0	7 0 0	68 to 70
		Guiseley, n. Leeds			
		Harrogate			
		Heywood			
1500	10	Kilmarnock	10 0 0	2 0 0	8 0 0
3200	25	Leicester	25 0 0	4 10 0	27 10 0
120	25	Lewes	25 0 0	6 0 0	26 0 0
		Limerick			
1080	25	Lincoln	25 0 0	7 10 0	42 10 0
		LONDON COMPS.—			
47000	10	Berlin	10 0 0	4 10 0	8 to 9
12000	25	Chelsea	25 0 0	5 5 0	28 to 29
975000	Sk.	East London	Stock.	6 0 0	126 to 128
10000	50	Grand Junction	50 0 0	8 0 0	78½ to 79
5840	25	Do., ¼ shares	25 0 0	8 0 0	39½ to 39½
2160	25	Do., new ¼ sh.	10 0 0	7 10 0	
2310	100	Kent	100 0 0	6 0 0	129 to 131
1460	100	Lambeth	100 0 0	6 0 0	110 to 115
4120	50	Do., new shares	50 0 0	6 0 0	51½ to 53
		New River		441 6 8 per sh.	£17,400
1560	100	New River London Bge. Annuities	100 0 0	2 10 0	55 0 0
	5	N. Mdlsx. L. £30,000			
3036	100	Southwark and Vauxhall	100 0 0	6 0 0	126 to 128
3036	25	Do., do.	25 0 0	6 0 0	31½ to 33½
1296	100	Do., do.	100 0 0	5 0 0	104 to 106
1296	100	Do. (1867)	85 0 0	4 10 0	106 to 108
12168	61	West Middlesex	61 0 0	5 15 0 per sh.	110 0 0
		Do., new shares	6 2 0	4 0 0	9 to 9½
		Liskeard			
		Maidstone			
		Maldon (Lim.)			
		Margate			
		Matlock			
550	10	Neath	9 0 0	4 10 0	10 10 0
310000	Sk.	Newestl. & Gatshd.	All.	4 10 0	77 to 78
9600	6½	Do., pref. do.	5 0 0	5 0 0	5½ to 5½
135	20	Newport, Carisbrooke	20 0 0	4 10 0	26 0 0
		Newport, Mon.			
		Newry (L.) £6000			
1500	10	North Cheshire	10 0 0	7 10 0	13 0 0
1581	10	Do.	2 0 0	7 10 0	2 12 0
	10	North Shields	10 0 0		12 to 12¼
		Norwich			
3600	50	Nottingham	50 0 0	5 0 0	60 10 0
		Pontypridd (Lim.)			
		Poole District (L.)			
8000	10	Portsmouth	10 0 0	6 0 0	
8000	5	Do.	2 10 0	6 0 0	
301	10	Queenstown (L.)	10 0 0	4 0 0	10 0 0
99	10	Do.	2 0 0	4 0 0	2 0 0
100	10	Do., new shares			
400	5	Ramsey, I. of Man	5 0 0		
1500	10	Ramsgate	10 0 0	6 0 0	13 to 13¼
		Reading			
		Rochdale			
		Rothesay (L.) £7000			
		Royston (L.) £2500			
		Saffron Walden (Lim.)			
		St. Helen's			
		Scarborough			
		Sheffield			
		Shrewsbury			
		Southport			
11184	10	South Staffordshire	10 0 0		11 17 0
2554	10	Do.	5 0 0		
		Spalding			
21000	5	Staffordshire Potteries	5 0 0	6 0 0	7 5 0
1800	12½	Stockton and Middlesboro'	12 10 0	6 0 0	
800	12½	Do., A shares	12 10 0	6 0 0	
1591	12½	Do., B shares	7 0 0	6 0 0	
4000	10	Do., C preference	2 0 0	5 0 0	2¾ to 3
		Stow-on-W. £1000			
33200	5	Sunderland and South Shields	5 0 0	9 10 0	9 7 6
		Tintwhistle			
		Tolcross, Lanark			
		Tweedmouth (L.) £500			
		Wakefield			
3000	10	Warrington	10 0 0	7 10 0	15 5 0
		Wellington, Salop			
		Weston-sup-Mare			
		Weymouth			
		Winchester Gas and Water			
		Wirral, Cheshire			
20000	5	Wolverhmptn New	5 0 0	4 0 0	5 0 0
		Yeadon (Limited)			
6000	10	York New Co.	10 0 0	5 0 0	11 12 6

WATER-WORKS BELONGING TO PRIVATE INDIVIDUALS.

Campbelltown.
Chidwall (Lancaster).
Hyde (Cheshire).
Knaresborough.
Stamford.

WATER-WORKS BELONGING TO LOCAL BOARDS OF HEALTH, MUNICIPAL CORPORATIONS, OR COMMISSIONERS,

Acting under special Acts of Parliament.

Aberdeen.
Abergavenny.
Aberystwith.
Alnwick.
Ashby-de-la-Zouch.
Ashton-under-Lyne.
Baildon, Yorkshire.
Barnsley.
Bath.
Belfast.
Bilston.
Birkenhead.
Bishop's Auckland.
Bolton.
Bradford, Yorkshire.
Brynmaur, Brecon.
Burnley.
Bury St. Edmund's.
Carlisle.
Carmarthen.
Chelmsford.
Chorley.
Cork.
Coventry.
Croydon.
Darlington.
Dartmouth.
Dorchester.
Dover.
Dublin.
Dumfries.
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Epsom, Surrey.
Fareham, Hants.
Glasgow.
Gloucester.
Greenock.
Halifax.
Hastings and St. Leonard's.
Haverfordwest.
Haworth, Yorkshire.
Huddersfield.
Hull.
Ilfracombe, Devon.
Keighley.
King's Lynn.
Kirkcaldy.
Knighton, Radnor.
Lancaster.
Leamington.
Leeds.
Leek.
Leith.
Liverpool.
Llandilo.
Llanelly.
Lytham.
Macclesfield.
Maidstone.
Manchester.
Merthyr Tydvil.
Montrose.
Nantwich, Cheshire.
Oldham.
Oxford.
Paisley.
Pembroke.
Penrith.
Penzance.
Perth.
Peterhead.
Pontefract.
Poole.
Port Glasgow.
Preston.
Pultneytown, Caithness.
Rotherham.
Rugby.
Salford.
Salisbury.
Sheerness.
Shipley.
Southampton.
Stirling.
Stockport.
Stroud.
Swansea.
Teignmouth.
Torquay.
Tunbridge Wells.
Wallasey.
Warwick.
Welchpool.
West Cowes.
Whitby.
Whitehaven.
Wigan.
Windhill, Yorkshire.
Wirksworth.
Worcester.

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	29	33	51	70	89	107	126	149	177	208 lb

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1 (f.o.b.)	3 15 0	2 14 0	2 7 6	3 10 0	3 10 0
1¼ and 2-inch Socket-pipes	7 10 0	6 0 0	6 15 0	6 15 0	7 10 0
2½ and 3-inch ditto	7 0 0	6 0 0	6 5 0	6 10 0	7 0 0
4 and 5-inch ditto	6 10 0	5 10 0	5 15 0	6 0 0	6 10 0
6 inches and upwards ditto	6 5 0	5 0 0	5 10 0	5 15 0	6 5 0
Retorts, 1st fusion, hot blast	6 0 0	—	5 5 0	5 10 0	6 0 0
Ditto, 2nd ditto, cold ditto	7 0 0	5 15 0	5 15 0	6 0 0	7 0 0
Tank-plates, ¾ thick and above	6 10 0	5 10 0	5 10 0	5 15 0	6 5 0

WROUGHT-IRON TUBING,

Subject to 50 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 feet—per foot	1 8	1 0	0 10	0 7	0 5	0 4½
Ditto ditto, from 6 inches to 18 inches—each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting-pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows (wrought iron)	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, ditto	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 2-quart	15 0	14 0	13 6	13 0	12 0	—

GAS COALS.—*Per Ton.*

Newcastle.—Unscreened:—

East Castle, Haswells, Nettlesworth Primrose, and South Pelaw	7s.6d.
Felling, Pramwell Gate, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	7 9
Burnhope, Craghead, Charlaw, Derwent, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Mickley, New Pelaw, Pelaw Main, Ravensworth, Seaham, South Moor Pelton, South Leverson, Townley Main, Tyne Main, West Pelaw, Wearmouth Hutton, and Witton	8 0
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	8 3
Brancepeth, Dean's Primrose, Londonderry Gas, New Pelton, Pelton, South Peareth, Stella, Urpeth, Washington Hutton, and West Leverson	8 6
Ramsay's Newcastle Cannel	15 0
Wigan Cannel (at Liverpool)	17 0
Scotch Cannel:—	
Boghead (at Leith)	42 6
Muirkirk	27 0
Kirkness, best (at Burntisland)	28 6
Capeldrae, 1st quality (at ditto)	28 6
Ditto, 2nd ditto (at ditto)	18 6
Cowdenbeath	12 0
Leamahago (at Glasgow)	31 6
Ditto (at Granton)	32 6
Arniston	27 6
Wemyss	27 6
Haywood, Wilsontown (at Granton)	23 0
Pirnie, or Methill	17 0
Lothian's Cannel (at Leith)	28 0
Myles' Cannel	23 6
Lochore Parrot (at Burntisland)	28 0

FREIGHTS.

Coastwise—Newcastle.—Per Ton:—

Chatham and Rochester	6s. 3d. to 6 0
Cork	9s. to 9 6
Dover, Folkestne, & Ramsgate	7 0
Dublin	9s. 6d. to 10 0
Exeter Quay	8 6
Ipswich	5 6
London (from Leith)	9 0
London (Pool)	6s. to 6 3
Lowestoft and Yarmouth	5s. 3d. to 5 6
Portsmouth & Southampton	8 0
Plymouth	7 6
Shoreham	7 6
Whitstable	7 0
Weymouth	8 0

Foreign.—Per Keel:—

Barcelona	£18 5
Bordeaux	14 0
Boulogne and Calais	7 10
Cadiz	12 0
Cronstadt	—
Copenhagen	11 10
Genoa	18 0
Hamburg	11 0
Havre de Grace	8 10
Leghorn	17 0
Lisbon	12 0
Rotterdam	11 0
Stettin	9 10
Trieste	12 0
Venice	16 0

SUNDRIES.

Best Nstle. Fire-bks., p. 1000, £2 10s. to £2	15 0
Cliff's Fire-bks. (at Wortley), p. 1000	2 15 0
Ingham's ditto (at Wortley), p. 1000	2 15 6
Fire-clay Retorts, p. ft. run, 9s. 6d. to	0 7 0
Tough Cake Copper, p. ton	75 0 0
English Pig Lead, p. ton	18 15 0
Welsh Bar Iron (in London), p. ton	6 10 0
Foreign Spelter, p. ton	20 5 0
English Block Tin, p. ton	96 0 0
Banca, p. ton	90 0 0
Tarred Rope Yarn, p. cwt.	1 0 0

Advertisements.

IMPROVED GAS-ENGINES.

KINDER AND KINSEY'S PATENT.

THE GAS-ENGINE COMPANY, LIMITED,

Having secured the above Patent, which embodies considerable and important improvements upon the Lenoir Engine, are now prepared to execute orders for Engines of one, two, and three horse power made in accordance therewith.

These Engines are worked with a very small quantity of water. They can be fixed for a nominal sum, and their working power will be guaranteed for twelve months.

The inspection of intending purchasers is solicited at the Company's Factory, 4, Vine Street, York Road, Lambeth, S., and the severest test invited before ordering any Engine.

PRICES:

One-Horse Power, £85; Two-Horse Power, £110; Three-Horse Power, £135.

DELIVERED FREE TO ANY RAILWAY STATION IN ENGLAND OR SCOTLAND.

Further particulars on application to the SECRETARY, 92, CANNON STREET, LONDON.

TO GAS COMPANIES.

WANTED, by May 1, 1868, a second-hand set of FOUR PURIFIERS, 10 ft. to 12 ft. square, with centre-valve, connexions, lids, and lifting apparatus complete. State depth of purifier and of lute, size of connexions, &c., and price, to the SECRETARY of the Leamington Priors Gas Company, before the 20th proximo.

Gas-Works, Leamington, Dec. 21, 1867.

TO GAS ENGINEERS AND MANAGERS.

WANTED, a situation as Turner and FITTER. Good general knowledge as machinist, and in gas and experiment fittings. Good reference.

Address J. G. B., 2, Graham Terrace, ISLINGTON.

WANTED, by the Advertiser, aged 20, a Situation as ASSISTANT to an Engineer of Gas-Works. Four years experience. Good reference.

Address LESSEE, Gas-Works, Pewsey, WILTS.

TO GAS-FITTERS.

WANTED, immediately, a respect- able, steady, sober man as Gas-Fitter and Meter Inspector. He will be required to lay mains and services, and must be able to do the whole of the smith's work required on the works. Wages £1 7s. per week.

Applications, in own handwriting, stating age, &c., accompanied with testimonials, to be sent not later than the 13th inst., to the MANAGER and SECRETARY, Gas-Works, Abingdon, BERKS.

GAS MANAGER WANTED.

WANTED, a Man to take the Prac- TICAL MANAGEMENT of a Gas-Work, capable of producing 100,000 cubic feet of gas daily.

Applications to be addressed to X. Y. Z., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, a good practical DRAUGHTSMAN for an Engineer's and Iron-Works Office, accustomed to make general working and finished drawings of Gas-Works.

Address H., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO GAS COMPANIES.

WANTED, a re-engagement as MANAGER to a Gas Company making over 10,000,000 annually. The Advertiser is a mechanic, and has had large experience in all the branches of his profession. Can keep accounts by double entry, and collect if required. No objection to go abroad. Testimonials, references, and security can be produced of a satisfactory nature.

Address J. K., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

GAS TAR.

FOR SALE, at the Weymouth Gas- Works, a large quantity of TAR, upwards of 100,000 gallons.

Tenders for same to be sent to ROWLAND THOMAS, Esq., Chairman of the Company, WEYMOUTH.

CLERK.

WANTED, by a young Man (22), a situation as CLERK. Has had seven years experience. Can read indexes.

Address A. B., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO GAS ENGINEERS, IRONFOUNDERS, AND CONTRACTORS.

TO be disposed of, a Valuable Patent for the manufacture of apparatus in considerable repute, and used by Gas Companies for the last three years and a half, affording a good profit, which may be greatly increased with moderate exertion. The sole reason for desiring to part with it is, that the Patentee's other engagements will not admit of his devoting the time to its extension which the merits of the invention warrant.

Apply by letter, with real name and address, to C. E., care of Mr. W. H. Bennett, Patent Agent, 42, Parliament Street, LONDON, S.W.

TO IRON TUBE, LEAD PIPE, AND GAS-FITTING MANUFACTURERS.

THE Directors of the York United Gaslight Company are prepared to receive TENDERS for the supply for Twelve Months of Wrought-Iron Gas and Steam Tubes and Fittings, stating the weights per foot, Lead or Composition Gas-Pipe and Pig Lead per cwt., and Plain Gas-Fittings, delivered at York. Tenders marked on the outside.

To be delivered at the Company's Office, YORK, by Ten o'clock on Thursday, the 15th of January inst.

By order,

J. BRADDOCK, Clerk.

JOHN VICKARY,

GAS ENGINEER AND CONTRACTOR, IRON AND BRASS FOUNDER,

WORKS—EXE ISLAND, EXETER,

Tenders his best thanks to the various Gas Companies in **England, Ireland, and Wales,** for the very liberal and kind support he has received for the last **22 years,** during which period he has erected and extended above **200 Gas-Works.**

In addition to the numerous towns wherein he has been engaged, he begs reference to the following testimonial:—

Plymouth and Stonehouse Gaslight and Coke Company.

Sir,—I have much pleasure in testifying that the 100-foot Telescope Gasholder and Cast-Iron Tank, erected by you for this Company in 1862, has given the highest satisfaction, and never required the slightest attention or adjustment since its completion.

(Signed) PETER ADAMS, Chairman.

He has also erected a 100-foot Gasholder and Cast-Iron Tank at **Exeter;** an 80-foot Telescope Gasholder and Iron Tank at **Devonport;** a 90-foot at **Torquay,** &c. &c. At either of those works satisfactory references can be made.

He also begs particular attention to his **Improved Gas-Meters,** either **Wet, Dry, or Compensating,** the materials and workmanship of which guaranteed of the very best description, and which has gained for his Meters so excellent a reputation for these last **20 years.**

RETORTS, DIP & ASCENSION PIPES, HYDRAULIC MAIN, CONDENSERS, PURIFIERS, STATION-METERS, GOVERNORS, VALVES, and GASHOLDERS,

Of any size, and every description of article required in Gas-Works.

Mains, Tees, Connexions, and Syphons, from 2 to 12 in., always in stock, and supplied at Scotch prices.
Clay Retorts and Fire-Goods of every description.
Gas-Fittings of the most modern designs.
Iron Pipe and Fittings, Service Cocks, &c.
Plans, Specifications, and Estimate for the erection of New Gas-Works of any size furnished.

WALKERS' PORTABLE STEAM BOILERS,

ON WHEELS,

Constructed expressly for Gas-Works for cleansing the pipes and apparatus of accumulations of Naphthaline, congealed Tar, &c., thawing the Gasholder Tanks and Water Lutes of Telescopic Gas-holders, working Steam-Engines, &c.

No Gas Company should be without one, the entire cost being often saved in one winter.

MIDLAND IRON-WORKS, DONNINGTON, NEWPORT, SHROPSHIRE.

F. SIMMONDS, Senr.,

221, KINGSLAND ROAD,

RETORT & BOILER SETTER

For the Chartered Gaslight Company, Brick Lane and Curtain Road Stations, and numerous Gaslight Companies, London and Provincial.

NO CONNEXION WITH ANY OTHER RETORT SETTER.

Estimates given with or without materials.

SILVER MEDAL, INTERNATIONAL EXHIBITION, PARIS, 1867.

LLOYD AND LLOYD,

ALBION TUBE-WORKS, BIRMINGHAM,

MANUFACTURERS OF

WROUGHT-IRON TUBES & FITTINGS,

PLAIN, GALVANIZED, & ENAMELLED, for Gas, Steam, and Water, from ⅛ in. to 6 in. bore.

STOCKS, TAPS, and DIES, GUN METAL GLAND-COCKS, WATER-GAUGES, &c.

PATENT LAP-WELDED IRON TUBES

For Locomotive and Marine Boilers, &c.

LONDON WAREHOUSE—No 66, QUEEN STREET, E.C.

LIVERPOOL: No. 4, Cooper's Row, and Bold's Yard, Strand Street.
MANCHESTER: Barlow's Croft, Chapel Street, Salford.

GEORGE ANDERSON,

GAS AND CONSULTING ENGINEER.

OFFICES REMOVED TO

19, NORTHUMBERLAND STREET, CHARING CROSS.

MR. ANDERSON advises Companies on all matters connected with the manufacture of Gas and the construction of Works.

PATENTEE & MANUFACTURER of the following Inventions:—

RETORT SETTINGS, heated by tar without the production of smoke.
STEAM-ENGINES and EXHAUSTERS, separately or combined.
FOUR-WAY VALVES, one of which is equal to three ordinary Valves.
STATION GOVERNORS in which the Gasholder cannot tilt and cause accidents.

A Pamphlet containing Eighteen Illustrations of the foregoing, with letter-press on the construction of Works, post free, 2s. 6d.

"The Author is well qualified to speak authoritatively upon the important subjects to which his pamphlet refers."—ARTIZAN.

INVERKEITHING FIRE-CLAY WORKS.

WILLIAM FRASER,

Having recently greatly enlarged these Works, can undertake

CONTRACTS AT LOW PRICES TO ANY EXTENT.

FIRE-CLAY RETORTS WERE FIRST MADE AT HIS WORKS,

And to this Department great attention is paid. Wherever used they have given satisfaction.
He invites attention to the following certificates.

TESTIMONIALS BY SOME OF WM. FRASER'S CUSTOMERS.

I.—*The late* F. LYON, *Esq., Manager and Engineer of the Edinburgh and Leith Gas-Works.*

Edinburgh and Leith Gaslight Company, Edinburgh, March 13, 1855.

Dear Sir,—In reply to yours of the 10th inst., I have to state that we have used Fire-Clay Retorts, made at the Inverkeithing Works, for twenty-five years. For upwards of ten years, I may say, we used them exclusively, and found them give satisfaction. For the last fifteen years we have been getting a part of our clay retorts from other makers. We find yours to stand better than some, and equal to any we have yet tried.—I am, &c., FRAS. LYON.

Wm. Fraser, Esq., Inverkeithing.

II.—JOHN REID, *Esq., Engineer and Manager of the Edinburgh and Leith Gaslight Company.*

Leith, Jan. 29, 1867.

Dear Sir,—In compliance with your request, I hereby certify that I have employed Fire-Clay Retorts of your manufacture, both here and elsewhere, for upwards of twenty-four years, with much satisfaction. I find them capable of sustaining the highest working temperature, under which they last as well as any I have seen used. They are possessed of a special quality, by which the carbon which accumulates inside is very easily removable, without injury to the Retort itself; and the style of workmanship and finish is all that can be desired. I have no objection to your making use of this testimony, so far as you may think it useful in promoting your business elsewhere.—I am, &c., JOHN REID, Engineer and Manager.

Wm. Fraser, Esq., Inverkeithing.

III.—J. Z. KAY, *Esq., Founder and Engineer, Glasgow.*

Phœnix Iron-Works, Glasgow, Oct. 30, 1867.

When I was manager and engineer of the two Gas-Works in Dundee, I used extensively Fire-Clay Retorts manufactured by Mr. Fraser, Inverkeithing. They were also generally used in other works where I acted as consulting engineer. I have pleasure in stating that I consider Mr. Fraser's Retorts to be of a very superior quality, and are not surpassed by any of which I had experience. I have often had occasion to visit his works, and observed that special attention was paid to the manufacture of Retorts, which have been made there, with manifest success, for upwards of forty years. Gaslight Companies may order these Retorts with every confidence that they will give satisfaction. J. Z. KAY.

IV.—*The Late Mr.* DOW, *Manager, Stirling Gaslight Company.*

Stirling Gaslight Company's Office, Jan. 29, 1855.

Dear Sir,—I have much pleasure in testifying to the excellence of the Fire-Clay Retorts made at the Inverkeithing Brick-Works.

I have used them constantly in the Stirling Gas-Works for upwards of eighteen years. *They last with me not less than four years. Some of them are now going the* SIXTH YEAR, and give uniform satisfaction.

From their greater durability, I prefer them to all other retorts I have tried, made by other celebrated makers.

I use those of the circular form, 14 inches diameter and nearly 4 inches thick, 9 feet long, and made in two pieces. Some approve of thinner retorts, and in one piece, but I find that kind suits me best, and order them so accordingly.

I have every confidence in recommending the Inverkeithing Retorts and other fire-clay articles manufactured there.—I am, &c., JOHN DOW, Manager.

Wm. Fraser, Esq., Inverkeithing.

V.—*Messrs.* R. TULLIS & CO., *Auchmuty and Rothes Paper-Mills.*

Auchmuty and Rothes Paper-Mills, Jan. 29, 1866.

We have used Fire-Clay Retorts, got from Inverkeithing, in our Gas-Works for the period of twenty years; and having found them to be of a quality uniformly good, we can confidently recommend them to others, believing them to be the best in the market. R. TULLIS & CO.

VI.—JOHN ROBERTSON, *Esq., Manager, Kinross and Milnathort Gas-Works.*

Kinross and Milnathort Gas-Works, Jan. 29, 1867.

I feel happy at having the privilege to adhibit my name to the certificate in favour of your articles. In regard to the Retorts and other materials manufactured at your works, I can bear ample testimony to their superiority, as I have had the practical experience of working them for the last twenty-seven years.

Mr. Fraser, Inverkeithing. JOHN ROBERTSON, Manager.

VII.—GEORGE AITKEN, *Esq., late Manager of Dalkeith Gas-Works.*

Dalkeith Gas-Works, Aug. 15, 1848.

I intend to be over in the course of a few days to order some more Retorts. You will, perhaps, be surprised to learn that some I got formerly have gone four years, and are still in good condition. They might go longer, with some repair, but I think it better not to risk them. GEORGE AITKEN.

Mr. Fraser, Inverkeithing.

VIII.—A. M'PHERSON, *Esq., Manager, Perth New Gas-Works.*

Your Retorts in one piece give entire satisfaction.

Mr. Fraser, Inverkeithing. A. M'PHERSON, Manager.

IX.—WM. M'KENZIE, *Esq., formerly of Cupar, now of Dunfermline.*

Gas-Works, Dunfermline, Oct. 31, 1867.

Retorts and other materials made at Inverkeithing Fire-Clay Works have been used almost exclusively at these works since their establishment, nearly forty years ago. My own experience of them, here and at Cupar-Fife, extends over fourteen years. These Retorts have invariably given me great satisfaction. They last well, and are quite equal if not superior in every respect to any others which I have used.

WM. M'KENZIE, Manager.

X.—WILLIAM HISLOP, *Esq., Manager of Falkirk Joint-Stock Gas-Works.*

Joint-Stock Gas-Works, Falkirk, March 22, 1854.

The Retorts which we got from you in November, '52, have been cooled down three times, and are still almost as good as that day they were put on.

WILLIAM HISLOP.

XI.—ROBERT DOUGLAS, *Esq., Manager of Gas-Works, Newcastle-on-Tyne.*

Newcastle-on-Tyne Gas-Works, Nov. 12, 1867.

Fire-Clay Retorts and other materials manufactured by Mr. Fraser, Inverkeithing, were very largely used at the Bankside and Vauxhall Stations of the Phœnix Gaslight Company for ten years, when I was superintendent at these stations. I used them previously, when manager of Cupar Gas-Works, Scotland. My experience of them extends to nearly thirty years. His manufactures are of so superior a quality that I can confidently recommend them. It appears to me his fire-clay is peculiarly suitable for making Retorts, and that he has benefited by his lengthened experience. In Scotland, Inverkeithing Retorts have, during forty years, justly maintained a high reputation, and are principally used on the east and centre of that kingdom. They have been introduced into various works, both in England and Scotland, where I was consulted, and always gave satisfaction. RO. DOUGLAS.

XII.—D. HUNTER, *Esq., Superintendent, Phœnix Gas-Works, Greenwich.*

Greenwich Gas-Works, Jan. 31, 1855.

I used the Inverkeithing Fire-Clay Retorts at a work in Scotland, of which I was manager for several years, and can recommend them as equal in durability to any I have yet tried. DAVID HUNTER, Superintendent.

XIII.—J. DOUGLAS, *Esq., Superintendent and Secretary, Portsea Island Gaslight Company.*

Gas-Works, Portsea, Nov. 12, 1867.

I have pleasure in stating that Mr. Fraser's Retorts have been used three years on these works; that I have also had experience of them in other places; that I find them carefully made and well burned; that, from the nature of the material and the manufacture, they are durable and easily heated; and that, while I rank them equal to any, I consider them superior to most that I have tried.

J. DOUGLAS, Superintendent and Secretary,
Portsea Island Gaslight Co.

XIV.—*Certificate by Managers and Secretaries of various Gas-Works, in* 1855.

Retorts and other materials manufactured at Inverkeithing Fire-Clay Works have been used in our Gas-Works for the period annexed to our names, and have given every satisfaction. We can confidently recommend them. We believe these Retorts are not surpassed by those manufactured at any other works. They generally last two, but sometimes three years.

Managers Names.	Gas-Works.	Number of Years used.
DAVID TAYLOR	Abernethy	2
WILLIAM GALLOWAY	Alyth	6
ALEXANDER M'EWAN	Auchterarder	8
D. KINNIMOND	Auchtermuchty	10
J. ADAMSON	Anstruther	10
J. ROSS MACVICAR, Secretary	Bridge of Allan	11
A. WATSON	Banff	10
J. G. SHEPHERD, Parish Clerk	Blairgowrie	10
JOHN ANDERSON	Bo'ness	10
JAMES BARCLAY	Brechin	10
GEORGE MYERS	Broughty Ferry	5
JOHN R. GARVIE	Burntisland	9
WM. MACKENZIE	Cupar	11
JAMES REID	Coupar-Angus	8
GEORGE BOYD	Crieff	10
MARTIN WATTS	Deanston	10
ROBERT CORTEEN	Douglas, Isle of Man	4
ABR. MALCOLM	Dumfries	1
GEORGE GORDON	Errol	2
WM. GALLOWAY	Eyemouth	6
ALEX. NIMMO, Secretary	Falkirk	12
JO. SMITH, Secretary	Falkirk Joint-Stock	6
ANGUS M'PHERSON	Forfar	14
JAMES WHITE	Ferry-Port-on-Craig	7
ROBT. RODGER, Treasurer	Falkland	10
EMANUEL & SON	Hambro Gaslight Assoc.	2
WM. STIVENS	Inverness	9
THOS. MELDRUM	Kennoway	1
JAS. TOD, Secretary	Kettle	6
WM. NORRIE	Kincardine	7
J. ROBERTSON	Kinross	15
JOHN MICHIE	Kirkcaldy	25
JOHN CUTHBERT	Kirriemuir	14
ROBT. CARLOW	Linlithgow	11
AND. CANT	Leslie	20
THOS. CARMICHAEL	Leuchars	2
JOHN DANSKIN	Leven	10
ROBERT REDDIE	Markinch	9
JOHN REID	Montrose	15
ALEX. CRAIGHEAD	Newburgh	6
L. MUNRO	Nairne	2
G. W. WILSON	Prinlaws Mills	5
THOS. WHIMSTER	Perth	28
R. FORD	Perth New Gas Compy.	8
R. MORTLAND	Stranraer	9
DAVID LISTER	Strathmiglo	9
JOHN DOW	Stirling	22
J. MACFARLANE	Thurso	7
DAVID HUNTER	Tullibody	9

THE ONLY COMPLETE CAST-IRON CASED DRY GAS-METER,

PATENTED MARCH 31, 1865.

Gas Engineers and others will find that the above Meter is made of the most durable material, also that it can be repaired at a fraction of the cost of any other Meter now manufactured; all the interior fittings, as well as the case, being fitted together with screws.

Drawings explanatory of the above on application.

SOLE MANUFACTURERS:

FULLERTON, SON, & CO., ABBEY MOUNT WORKS, EDINBURGH.

Station-Meters and Gas Apparatus, Consumers Wet Gas-Meters in Cast-Iron, and Dry in Tin Plate Cases.

ECONOMY IN GAS PURIFICATION.

Mc DOUGALL'S

HYDRATED PEROXIDE OF IRON.

This Oxide is now well known, and has gained at a number of the largest gas-works at home and abroad a decided preference for efficiency and durability. It is free from any mixture of sawdust or other material, every particle being available for use, thus causing the Purifiers to work double the time before it requires renewing, and saves one-third the cost of labour in charging them. It readily takes up sulphur, revivifies rapidly, and lasts longer than any other Oxide in the market. Prices on application to—

McDOUGALL BROTHERS, Manufacturing Chemists,

LONDON—11, Arthur Street West, London Bridge, E.C.; MANCHESTER—Riga Street, Shudehill.

ORLANDO BROTHERS'

SELF-ACTING DISTRICT GOVERNOR.

Prices, according to size, can be obtained upon application to

Mr. WILLIAM ARCHER,

METER COMPANY'S WORKS, OLDHAM.

LIVESEY FIRE-CLAY WORKS,

NEAR BLACKBURN, LANCASHIRE.

ORLANDO BROTHERS,

MANUFACTURER OF PATENT CLAY RETORTS,

AND EVERY DESCRIPTION OF

TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

EDWARD COCKEY & SONS,

IRON-WORKS, FROME SELWOOD,

PATENT GAS-VALVES.

A PRIZE MEDAL

WAS AWARDED TO THE PATENTEES AT THE INTERNATIONAL EXHIBITION OF 1862.

These Valves are formed of two cylinders, working one on the other horizontally, having their faces ground perfectly gas-tight.

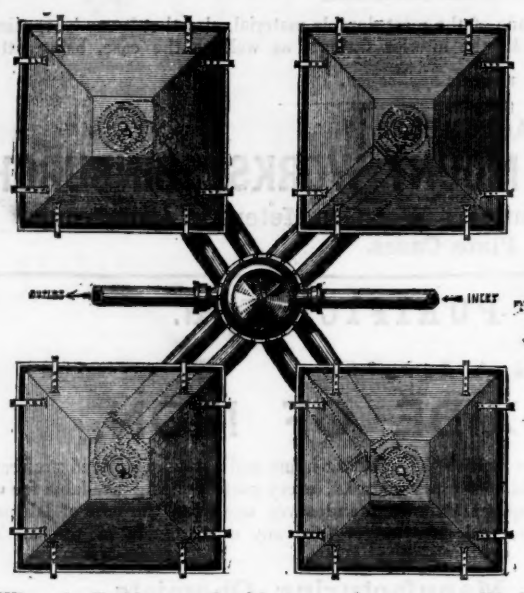
They are adapted either as central valves, for two, three, or four purifiers—as bye-passes—or as inlet and outlet-valves for gasholders.

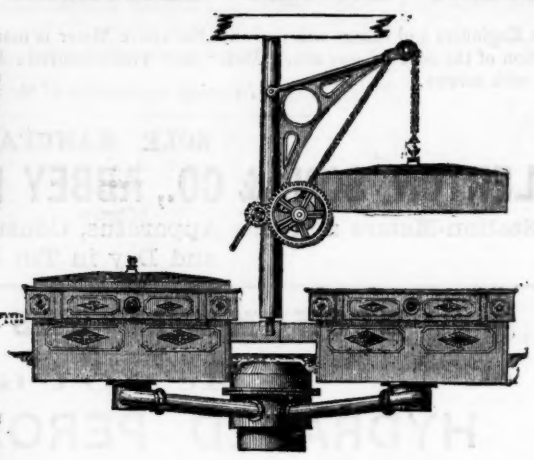
They have been fixed in some of the most important Gas-Works in the Kingdom, for more than eight years. Considerably over two hundred of them are now in use, and the most satisfactory reports of their advantages continue to be received. They are simple in construction, and not liable to get out of repair, and if in course of time the faces should leak, they can be easily re-ground and made as tight as ever, without removal from their positions. Each Valve is fitted with an index, which shows to the person in charge of the Works in what direction the gas is passing.

Frome, January 20, 1866.

WALKERS'

IMPROVED PURIFIERS AND SURFACED CENTRE-VALVES.





C. & W. WALKER

Are constructing these Purifiers with their simple straight connexions of all dimensions, from 30 feet square down to 4 feet square, the patterns of which are in constant use in their foundry.

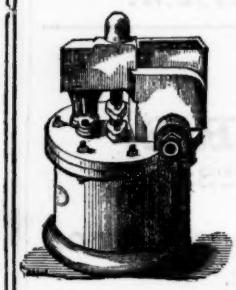
When the Purifiers are fixed in square the covers are lifted and travelled by the centre crane shown. When fixed in line, by a travelling crane on trellis girders.

Their Centre-Valves with their patented improvements have this *very great advantage over all other Centre-Valves*—they are *entirely shut in* and *protected by the casing*, all *danger of explosions* or the passage of foul gas being completely abolished. The *working of the Valve is so easy, and is so governed* that it can be safely **worked in the dark**. Directly the Valve has turned the required distance its motion is *instantaneously stopped*. The largest Centre-Valves in England which have been made by Messrs. Walker can be easily turned by one man with one hand. *See Clegg's "Treatise on Coal Gas," pages* 206–7.

MIDLAND WORKS, DONNINGTON, NEWPORT, SHROPSHIRE.

THE LONDON & WESTMINSTER METER COMPANY, LIMITED.

PATENTEES AND SOLE MANUFACTURERS OF



THE ABC GAS-METER.

EDGE'S PATENT INDEX.

MYERS'S PATENT WATER-METER.

(A CYLINDER & PISTON.)

The ABC GAS-METER shows in plain figures the money payable for Gas consumed, as well as the number of cubic feet.

MYERS'S WATER-METER is accurate in measurement, simple in action, and moderate in price.

Manufacturers of the ordinary Wet and Dry Meters, Governors, Photometers, and all other Gas and Water Apparatus.

JOHNSON'S PLACE, LUPUS STREET, LONDON, S.W.

N. DEFRIES,

INVENTOR OF THE FIRST SUCCESSFUL

DRY GAS-METER.

210,000 IN USE.

WORKS:

DIANA PLACE, EUSTON ROAD, LONDON.

D. GRANT & CO.,
GAS-METER MANUFACTURERS.

STATION-METERS ANY SIZE.
PHOTOMETERS, EXPERIMENTAL METERS,
PRESSURE-GAUGES, &c.
Price List on application.
GAS-METER WORKS, CROSSCAUSEWAY, EDINBURGH.

HARRIS and PEARSON,
PROPRIETORS OF
BEST GLASS-HOUSE POT AND CRUCIBLE CLAY
MANUFACTURERS OF
FIRE BRICKS, GAS RETORTS, &C
AMBLECOTE FIRE CLAY AND BRICK WORKS,
STOURBRIDGE.
Late in the occupation of I. and W. Xing. Originally J. Pidcock, Esq.
NB A quantity of best Clay Retorts in stock, viz.—Circulars, 14 inches, 15 inches. 16 inches.
D's, 16×12, 15×14, 20×16, 16×18.

INTERNATIONAL EXHIBITION,
1862. CLASS X.
PRIZE MEDAL
For excellence of Fire-Clay Gas Retorts, and "HONOURABLE MENTION" for good quality of Fire-Bricks.
WILLIAM STEPHENSON & SONS,
THROCKLEY,
NEWCASTLE-ON-TYNE.

THOMAS CARR & SON,
MANUFACTURERS OF
FIRE-BRICKS, LUMPS, TILES, RETORTS, &c. &c.
SCOTSWOOD FIRE-BRICK WORKS,
NEAR
BLAYDON-ON-TYNE.

STOURBRIDGE FIRE-CLAY WORKS.
E. BAKER & CO.,
24 WHARF, HARROW ROAD, PADDINGTON, W.

FIRE-BRICKS, LUMPS, SQUARES, and TILES of all dimensions.
GAS-RETORTS always in stock.
GARDEN EDGINGS of various patterns.
ORNAMENTAL BUILDING BRICKS.
GRATE BACKS in various designs.
Contracts entered into to set Retorts, erect Furnaces, &c.
Shipments on the shortest notice.

JAMES NEWTON & SONS,
(Established 1820,)
FIRE-BRICK AND TILE MERCHANTS,
Wholesale and for Exportation,
FALCON DOCK, 78 AND 79, BANKSIDE,
SOUTHWARK, LONDON, S.E.,
DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and FIRE-CLAY, and every Article suitable for
GAS AND WATER WORKS.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay Goods.

WOOD SIEVES for GAS PURIFIERS.
THE BEST AND CHEAPEST
CAN BE PURCHASED FROM
T. COULTHARD, WEST STRAND, PRESTON,
LANCASHIRE.

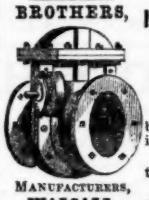
B. CARPENTER'S Improved Wood SIEVES for Gas-Purifiers.
Works: 14, John Street, Pentonville Road, LONDON, N.

The above sieves are used by the principal gas companies in London and the country. Their utility, durability, and cheapness combined, render them superior to all others.
Testimonials from gas engineers who have tested their qualities forwarded on application.
All orders punctually attended to, and estimates given if required.

STEARS BROTHERS & CO.,
Gas Engineers and Contractors,
3, GEORGE STREET, HULL,
AND
73, COLEMAN STREET, LONDON, E.C.

Contractors for Gas-Works of any size at home or abroad. Copy of testimonials from numerous Gas Companies can be had on application.

Trade Mark. THE MEDAL FOR 1862.
THE ONLY PRIZE MEDAL AWARDED FOR TUBES AND FITTINGS.
CROWN TUBE-WORKS,
WEDNESBURY STAFFORDSHIRE.
WAREHOUSE—81, UPPER GROUND ST., LONDON.
JAMES RUSSELL & SONS,
Patentees and First Makers of Wrought-Iron Tubes.

LAMBERT BROTHERS,

MANUFACTURERS, WALSALL.
REDUCED PRICES OF
IMPROVED GAS-VALVES
WITH WROUGHT-IRON PINIONS.
2, 2½, and 3 in.... 12s. per in.
4 in. to 6 in..... 11s. „
7 in. to 12 in..... 10s. „
These Valves are all proved on both sides to 30 lb. on the square inch before leaving the works.
Valves made with outside racks to order.
Also Water-Valves, with gun-metal faces and gun-metal screws.

JAMES M'KELVIE,
CANNEL COAL MERCHANT,
HAYMARKET,
EDINBURGH.
Established 1840.

WALTER MABON & CO.,
Engineers,
ARDWICK IRON-WORKS,
FAIRFIELD STREET, MANCHESTER,
MANUFACTURERS OF
IRON TANKS, GASHOLDERS,
GAS APPARATUS,
PIPES, VALVES, IRON ROOFS,
WROUGHT AND CAST-IRON GIRDER
DESIGNS, SPECIFICATIONS, & ESTIMATES FURNISHED.

GAS & WATER PIPES,
GIRDERS, COLUMNS, RETORTS, AND GENERAL CASTINGS,
quoted for on application to
GEO. BOWER,
MILTON IRON-WORKS,
WEST HARTLEPOOL.
N.B.—A large stock of 2 to 8 in. pipes usually ready for immediate delivery.

D. BRUCE PEEBLES,
Gas-Meter Manufacturer,
FOUNTAINBRIDGE
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THOMAS EDINGTON & SONS,
PHŒNIX IRON-WORKS,
GLASGOW,
Manufacturers of all kinds of
GAS AND WATER PIPES,
Branches, Bends, Water-Traps, Tank-Plates, Valves, and general Castings. Also
RAILWAY CHAIRS & SLEEPERS,
AND
GRIFFIN'S PATENT PERMANENT WAY.
London Office, 63, Old Broad Street.

BEST & HOLDEN'S
PATENT APPARATUS
FOR
CHARGING & DRAWING GAS-RETORTS,
AND FOR
CLOSING THE MOUTHS OF RETORTS WITHOUT CEMENT.

The above is one of the most important inventions in connexion with gas manufacture which has been introduced for many years, and merits the immediate attention of all Gas Companies. The Machine is simple in its construction, easily worked, and not likely to get out of order, while the saving in time and labour is very considerable. It has been applied at the Chartered Gas-Works, Westminster, with complete success, and has been viewed in operation by some of the most eminent gas engineers, both in London and from the provinces, their unanimous opinion being that the arrangement of the apparatus was perfectly new, and must eventually be adopted by all Gas Companies.
The Patentees are now in a position to treat for the use of their Apparatus.
For further information apply to
JNO. CHISHOLM & CO.,
44, MARK LANE, E.C.

W. J. HOLLANDS,
IRON MERCHANT,
31, BANKSIDE, LONDON, S.E.
SOCKET, FLANGE, HOT-WATER PIPES, AND ALL CONNEXIONS; RETORTS, HYDRAULIC MAIN, LAMP-COLUMNS, &c.; AND EVERY DESCRIPTION OF CASTINGS AND WROUGHT-IRON-WORK FOR GAS AND WATER-WORKS, STEAM, AND GENERAL PURPOSES.
N.B.—All goods kept in stock, and supplied at wholesale prices. Estimates given, and orders by post punctually attended to the same day.

JAMES OAKES and CO.,
ALFRETON IRON WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water-Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.
N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.
CHARLES HORSLEY, Agent.

ROBERT MACLAREN and CO.,
EGLINTON FOUNDRY, GLASGOW,
Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

BIRTLEY IRON WORKS,
CHESTER-LE-STREET,
DURHAM.
Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.
Warehouse in London for Cast-iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.
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FRASER'S PATENT RIBBED RETORTS.
THESE Retorts have been introduced at a large number of Gas-Works. The great durability of the Ribbed Iron Retort specially recommends it for works where an exhauster is not used. The Clay Ovens and Retorts are so constructed as to favour the more speedy and effectual carbonization of the Coal, whilst the deposition of Carbon does not so readily take place as in the ordinary Retorts.
Illustrated circulars with prices delivered will be furnished on application to ALEX. C. FRASER, Gas-Works, COLCHESTER.

BELGIAN CLAY RETORTS.
J. SUGG and CO., late ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.
Communications, addressed to J. SUGG and CO., GHENT, will receive immediate attention.

TO INVENTORS AND PATENTEES.
MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.
Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.
Patents procured for Foreign Countries.
Information as to cost, &c., supplied gratuitously upon application to the advertiser, 42, Parliament Street, WESTMINSTER. [Office of the JOURNAL OF GAS LIGHTING, &c.]

MR. G. W. STEVENSON, C.E., F.G.S., (for the last 10 years Engineer to the Corporation of Halifax), may be consulted upon all matters connected with the construction of gas-works, and the manufacture and supply of gas; also upon the construction of water-works and the supply of water to towns; and also in respect to the sewerage of towns, and sanitary works generally.
OFFICE: 14, Park Street, WESTMINSTER.

ALFRED PENNY, Gas and
CONSULTING ENGINEER,
WENLOCK IRON WORKS,
21, WHARF ROAD, CITY ROAD, LONDON.
Mr. PENNY having had a large experience in the construction, alteration, and management of Gas-Works, begs to inform the Directors of Gas Companies that he may be consulted on all matters appertaining thereto. He also manufactures Gasholders, Purifiers, and all the various apparatus used in Gas-Works, and keeps in stock Retorts and Mouthpieces, Socket-Pipes, Bends, Branches, T-pieces, &c. &c.
Plans, Specifications, and Estimates prepared.

D. W. OGG and CO. have lately engaged to represent one of the largest shippers of Scotch Cannels at prices that cannot fail to command the attention of Gas Companies at a period like the present, when quality of gas seems so desirable.
Offices, 3, Jeffery Square, St. Mary Axe, LONDON.

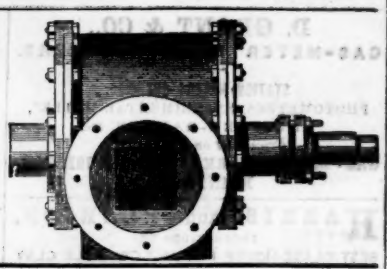
ROTATORY AND DOUBLE-ACTING GAS-EXHAUSTERS,

with many recent improvements, from 1500 to 150,000 cubic feet per Hour.

JAMES BURTON, SONS, & WALLER,

MAKERS OF ENGINES, MACHINERY, and IRONWORK for GAS-WORKS,
efficient and durable TAR, LIQUOR, and SYPHON PUMPS,
GAS-VALVES, with or without Wedges, worked with powerful Worm and Rack,
SELF-ACTING BY-PASS VALVES, with Lid and Relieving Lever,
ROTATORY, TUMBLER, and CAPILLARY WATER DISTRIBUTORS for SCRUBBERS.
SMALL-SIZE EXHAUSTERS KEPT IN STOCK.

JOHN'S PLACE, HOLLAND STREET, SOUTHWARK, LONDON, S.E.



KING BROTHERS,

STOURBRIDGE FIRE-BRICK AND RETORT WORKS.

KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them FREE FROM CRACKS AND CORRECT IN FORM. By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize.

Retort Ovens, Fire-Bricks, Guards, Saddles, Rabbitted Bars, Flues, and Quarries, are all Manufactured of the same quality of Clay.

Every Retort and Brick is branded "King Brothers, Stourbridge.'

WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.—Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*

THE GAS-METER COMPANY

(LIMITED), LONDON,

(Successors to CROLL, RAIT, and CO., LONDON, and WEST and GREGSON, OLDHAM.)

MANUFACTURE

STATION-METERS & GOVERNORS

At their Oldham Establishment, which has long possessed the reputation of supplying this description of apparatus of the most perfect construction and appropriate design.

CONSUMERS GAS-METERS IN CAST-IRON & TINNED SHEET-IRON CASES.

STREET GOVERNORS, PRESSURE and EXHAUST REGISTERS, TEST GASHOLDERS,

AND EXPERIMENTAL GAS APPARATUS GENERALLY.

For information, &c., apply to

W. ARCHER, Manager, Meter Factory, OLDHAM;

OR TO

GEORGE RAIT, Managing Director, KINGSLAND ROAD, LONDON.

E. J. & J. PEARSON,

DELPH & TINTAM ABBEY FIRE-CLAY & BRICK-WORKS,

STOURBRIDGE,

PROPRIETORS OF

BEST GLASS-HOUSE POT & CRUCIBLE CLAY;

MANUFACTURERS OF

GLASS-HOUSE POTS, CRUCIBLES, GAS-RETORTS, & FIRE-BRICKS OF EVERY DESCRIPTION.

PARIS, 1867.

CLASSES 24 and 63.

WILLIAM SUGG,

GAS ENGINEER.

LONDON, 1862.

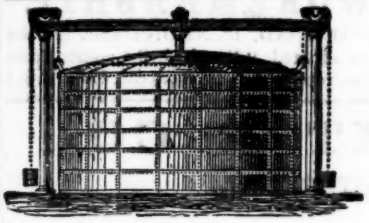
CLASSES 13 and 31.

PUBLIC LAMP GOVERNORS, LEVER COCKS, AND POLE LIGHTERS,

LAMP METERS AND BOXES.

The Catalogue and Lists of Prices for all the New Instruments and Apparatus of his Manufacture are now ready, and may be had on application, per post or otherwise, at

VINCENT WORKS, VINCENT STREET, WESTMINSTER, S.W.



IMPROVED GAS APPARATUS,

FOR TOWNS, VILLAGES, &c.,

INVENTED AND MANUFACTURED BY

W. C. HOLMES & CO.,

WHITESTONE IRON-WORKS, HUDDERSFIELD.

WILL BE SENT ON APPLICATION:—

PLANS, SPECIFICATIONS, and PRICES of GAS APPARATUS;

PLANS, SPECIFICATIONS, and ESTIMATES of the requisite BUILDINGS for each size of Apparatus;

PLANS of the IMPROVED ANNULAR CONDENSERS;

PLANS of the COMBINED PURIFYING APPARATUS, so eminently adapted for Exportation.

LONDON OFFICES—56, GRACECHURCH STREET, CITY.

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